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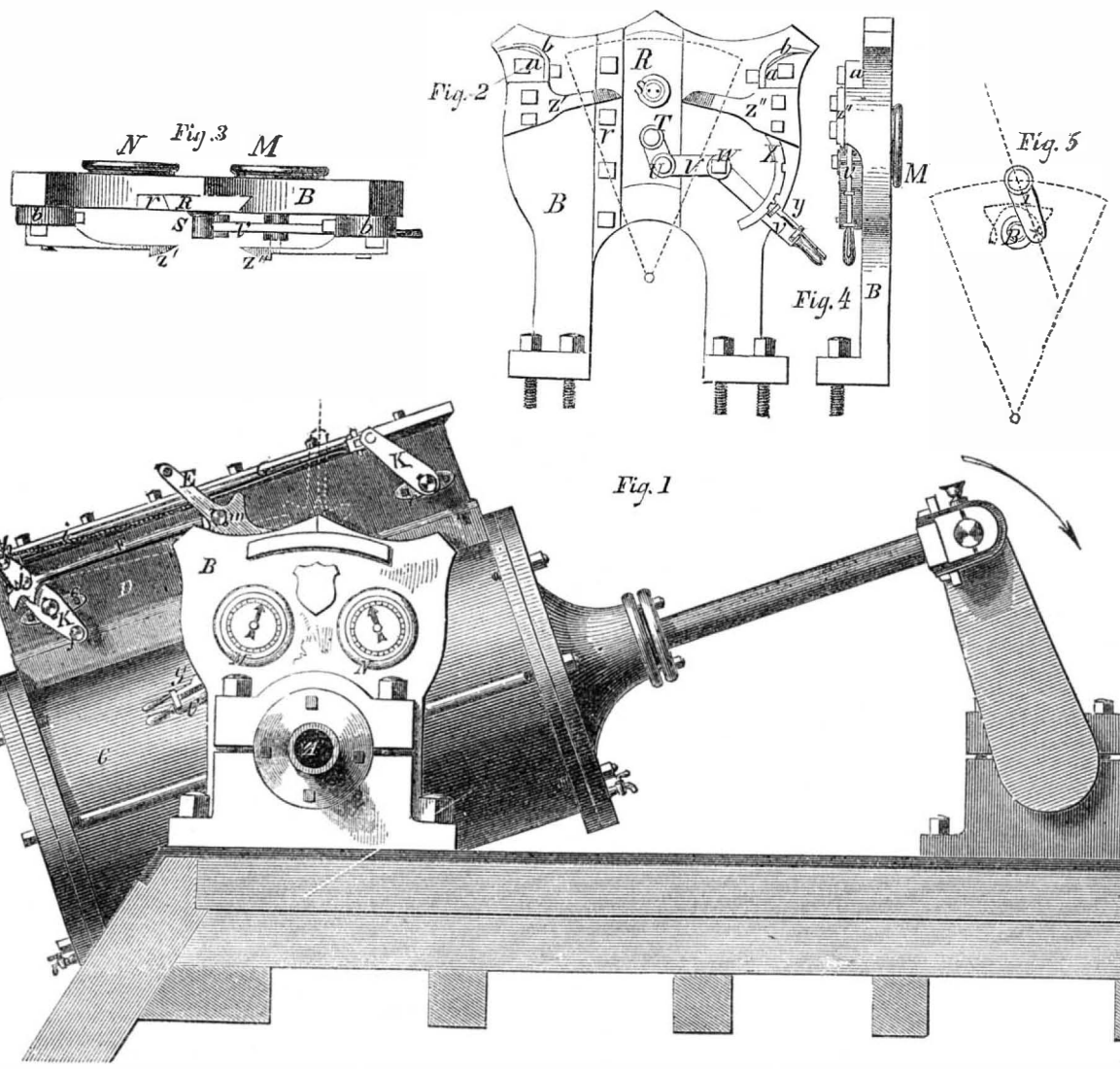
IMPROVED VALVE MOTION FOR OSCILLATING ENGINES.



Improvement in Oscillating Engines.

The annexed illustrations exhibit a valve motion which is applicable either to slide valves, puppet valves, or circular rolling valves.

Fig. 1 is a side view of an engine with the valve motion applied, the engine being at half stroke, and the crank supposed to be rotating in the direction of the arrow. Fig. 2 is an inside view of the stand, B, which occupies a prominent position in fig. 1. Fig. 3 is a plan of the said stand, B; and fig. 4 a front view of the same. Figs. 5, 6, and 7, will be hereafter explained.

C is the steam cylinder, having a steam chest, D, extending from end to end. The valves are arranged near the ends of the steam chest, and of whatever character they may be, are operated by two rock shafts, which pass through the steam chest, and carry arms, K K, to receive the necessary motion, said arms being connected by a rod, G. A is the steam pipe conveying the steam through one of the trunnions to the steam chest, D. The other trunnion, which is not shown, is supposed to convey the exhaust steam either to a condenser or escape pipe.

B is an upright stand striding the trunnion having on the outside a steam gauge, M, and clock, N. E is a rocking piece, working on a pin secured in a fixed position near the bottom of one side of the steam chest, and provided with a small handle at the top, for the purpose of enabling the valves to be worked by hand. This piece, of which fig. 5 is a view on a larger scale, is taken in the same direction as fig. 4; and fig. 7 is an inner face view on the same scale as fig. 6, has a slot to receive a stud, *m*, (see fig. 1,) to which is connected one end of a rod, F, which has two hooks at the other end to take hold of either of two studs, I I, on the rock shaft of the left hand valve. This rod, F, is shown in the engraving taking hold of the upper stud, I, which is the position for going a-head, but if it be dropped to the lower stud by the chain, *i*. The chain is connected with lever *f*, which is movable on the hub of the rocking piece, E, and serves to shift the rod, F, from one to the other of the studs, or to suspend it out of gear with both. The connection of the two valve rock shafts by means of the rod, G, causes the two valves to have a corresponding motion with the same lead and throw.

R is a vertical sliding piece dovetailed to fit the stand, B, as shown in fig. 3, and held in place by a piece, *r*, secured by screws. S, figs. 2 and 3, is a pin secured in the strip, R, and carrying a roller, with which the arm, 1, on the rocking piece, E, is brought into contact by the oscillation of the cylinder, for the purpose of giving motion to the rocking piece, and thereby causing it to operate on the rod, F, to open the valves. Below S a small pin, T, is secured in the sliding piece to connect it by a link, U, to a lever, V, for the purpose of adjusting the slide higher or lower, to vary the position of the pin, S, and thereby vary the amount of movement given to the rocking piece, and the width of opening of the valves. Z1 Z2 are two spring catches secured to the stand, B, to operate upon two arms, 2 2, attached to the rocking piece, E, for the purpose of operating the rocking piece to move the valves to shut off steam from the ports.

Operation.—When the engine is exactly on the center, with the cylinder horizontal, if the valves covered both ports equally the rocking piece, E, would stand vertical, as shown in dotted outline in fig. 1, but it is desirable to give the valves lead and lap, and when this is done, the rocking piece, E, requires to be moved from that position before the engine

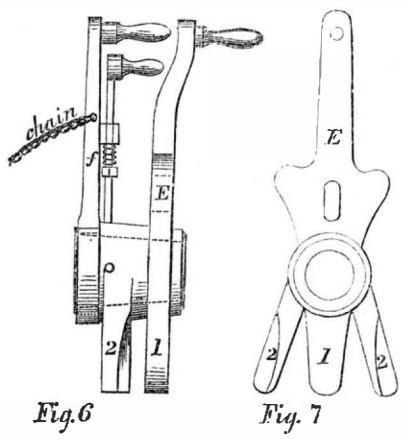


Fig. 6 Fig. 7

arrives on the center, in order to give it steam, and the more lap and lead the greater will be the distance it is required to be moved. This enables room to be left at either side of the arm, 1, according to which center the engine is on, for the pin, S, to come against the arm high enough up to give the full throw to the valves by the oscillation of the cylinder. The movement of the arm, 1, caused by coming in contact with the pin, is illustrated in fig. 5, where the pin is marked B, instead of S, as in figs. 2 and 3. When the cylinder is at its furthest points of oscillation in either direction, one or other of the arms, 2, which are beveled on their outer side, presses back the catch, Z′ or Z″, according to which way the cylinder has oscillated, and is then caught by the catch, so that when the cylinder commences its oscillation in the opposite direction, the arm, 2, is held by the catch long enough to cause the rocking piece, E, to rock far enough to close the valves. At the time the cylinder reaches its furthest point of oscillation one of the two projections on the sides of the upper part of the rocking piece press lightly on one of the two springs, *b b*, which are attached to two adjustable pieces, *a a*, secured to the stand.—These springs prevent concussion, and insure the catching of the arms, 2 2.

There is another way of varying the throw of the valves besides moving the piece, R, with the pin, S, viz., by shifting the pin, *m*, in the rocking piece, E. To stop the engine, the handle of the lever, V, is raised to lower the slide, R, with its pin, S, so low that the arm, 1, will not touch it. This valve motion works as well on an upright oscillating engine as on a horizontal engine. The advantage which this motion has over other valve motions for oscillating engines, is that it takes steam near the ends of the cylinder, thereby operating more quickly on the piston, and saving the steam in the ports. This is lost in cylinders that take steam through ports in the trunnions. This improvement also avoids the side pressure which heretofore has been a great drawback, especially when a vacuum is formed, for the trunnions soon become worn on one side, and out of line.

This engine is also well adapted for ferry-boats and vessels of all classes. The inventor thinks that oscillators will ultimately be the only engines used for ocean steamers. The attention of engineers has been directed to oscillating engines for a long time, and they have fairly worked their way into public favor. They are coming into extensive use for land purposes, being often employed in mills, where room is of importance. The present improvement is cheap in construction, easily worked, and very effective.

Further information may be had by addressing the inventor, M. D. DuBois, Newburgh, N. Y. Patented May 22, 1855.

Tooth Powders.

Quinine Tooth Powder.—Precipitated chalk, 1 lb.; starch powder, half a pound; orris powder, half a pound; sulphate of quinine, 1 drachm. After sifting, it is ready for sale.

Prepared Charcoal.—Fresh-made charcoal in fine powder, 7 lbs.; prepared chalk, 1 lb.; orris root, 1 lb.; catechu, half a pound; cassia bark, half a pound; myrrh, a quarter of a pound. Sift.

Homœopathic Chalk.—Precipitated chalk, 1 lb.; powder orris, 1 oz.; powder starch, 1 oz.

Cuttle Fish Powder—Powdered cuttle fish half a pound; precipitated chalk, 1 lb.; powder orris, half a pound; otto of lemons, 1 oz.; otto of neroli, half a drachm.

Borax and Myrrh Powder.—Precipitated chalk, 1 lb.; borax powder, half a pound; myrrh powder, quarter of a pound; orris, quarter of a pound.—[Piesse's Art of Perfumery.

In an artesian well now in course of excavation in New Orleans, La., the auger recently brought up, from a depth of five hundred and eighty feet, sand thickly interspersed with fibers of wood, fragments of bark, shells, &c.

On the 30th ult. the thermometer in this city stood for a number of hours at 96°; at 5 A. M. on the 1st of July it had fallen to 64°—a change of 30° in 24 hours.

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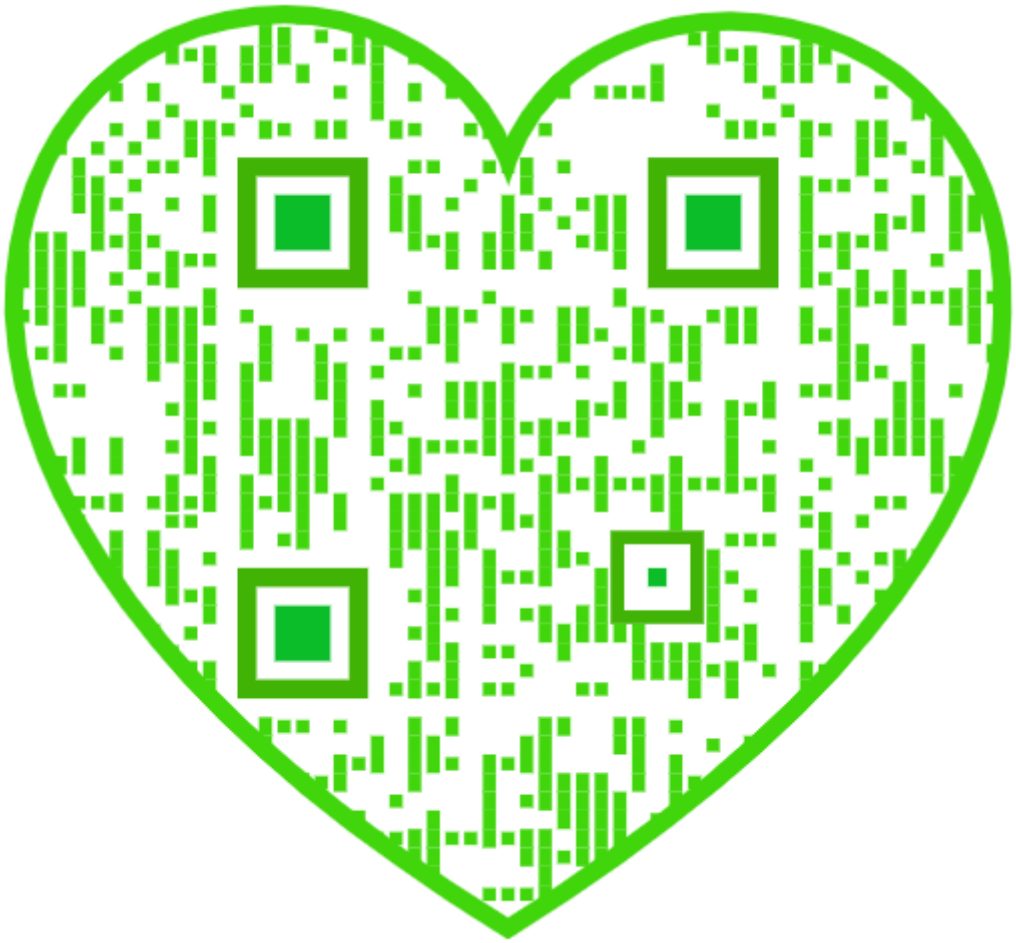

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JULY 1, 1856.

SECURING TIRES ON WHEELS—Wm. A. Ashe, of New York City: I do not claim securing the tire on a car wheel after the method illustrated in fig. 6, as this is quite old.

But I claim making the tire, B, with a narrow tongue, A, at the center of its width on its inner circumference, and the outer periphery of the circle of felloes, with a groove, C, to receive said tongue for the purpose of confining the tire on the wheel, and in order that the metal on the tire on either side of said tongue may be made quite thin, and of unvarying thickness from the tongue to the said edges of the tire, substantially as and for the purpose set forth.

DENTAL FORCEPS—Hazen J. Batchelder, of West Fairlee, Vt.: I do not claim the application of a rest or bearer to a pair of dental forceps, whereby they may be supported on any part of the jaw or teeth, adjacent to a tooth to be extracted; nor do I claim combining the forceps with the fulcrum slice or plate by a universal joint, nor do I claim combining with the fulcrum or bearer the handle or lever, by which the said fulcrum may be maintained in place.

But I claim applying or connecting the forceps and the bearer by a stirrup and slot, irrespective of the universal joint, and substantially as specified, or its equivalent, so that the distance between the extreme end of the bearer and the points or ends of the jaws of the forceps may be adjusted, or, in other words, either increased or diminished, as circumstances may require.

SAWING FELLIES—David Bowen, of Wadesville, Va.: I claim the described plank clamps, simultaneously adjustable in opposite directions, in combination with the mechanism connecting their case with the saw gate, arranged and operating substantially as and for the purpose set forth.

BRAKE FOR WAGONS—D. F. Breed, of Fulton, N. Y. I am aware that a self-relieving break, in backing, is not new, nor is it new to so arrange the gearing that a progressively increasing power is applied in the application of the brake to the wheels; I therefore do not claim to be the first to apply such arrangement of parts as will effect either of those objects.

But I claim the combination and arrangement of the revolving blocks, f, rubbers, g, connecting rods, b and d, crank lever, c, and neck yoke, d, for the purposes described.

MELODEONS—Jeremiah Carhart, of New York City: I claim, first, the coupler, f, arranged in a cavity of the key, and operating essentially as and for the purposes described.

Second, the double springs, m, constructed and applied substantially as described to act each on a valve of each set, so that by turning it the two valves may be liberated and capable of removal.

REAMING AND TAPPING GAS FITTINGS—Henry A. Chapin, of Springfield, Mass.: I claim the rotating tool holder, as constructed and operated in combination with the revolving chuck or clamp for holding the fitting, the whole being arranged substantially as set forth, for the purpose described.

FRAMING AND STRAINING WOOD SAWS—E. S. Clapp, of Montague, Mass.: I claim constructing the saw frame, A, with the two bows, E D, connected by a hinge, a, and having the rack, G, attached to the bow, E, the rack passing through a slot in the bow, D, the saw being connected to the bows, D B, substantially as shown and described for the purpose specified.

ROTARY PUMPS—Charles N. Clow, of Port Byron, N. Y.: I am aware that corrugated or cogged pistons have been used, and I wish it distinctly understood that I do not claim such cams or pistons.

But I claim the cams or pistons having smooth peripheries to revolve with their peripheries in contact, to form the abutment by gear wheels on the same shafts as said cams, the pitch line of which gears correspond in shape with the peripheries of the cams.

METALLIC PEN—Alphonzo Craytey, of Brooklyn, N. Y.: I claim the pen point protector, C, and ink distributor, in combination with the metallic pens, substantially as set forth.

CONCENTRATING APPARATUS FOR SULPHURIC ACID—William T. Clough, of Newark, N. J.: I claim the construction of a furnace so that the sulphuric acid will not affect or injure the lead or mineral tank or pan during the process of concentration, by means of a hot surface being placed above the liquor, substantially as described.

CUTTING AND CORING APPLES—Cook Darling, of Utica, N. Y.: I claim the machine substantially as described for dividing and coring apples at one operation, the knives having a lateral as well as a vertical motion in their descent, so as to separate the core by a cut wider in the center than at the ends, as described, the whole being arranged substantially in the manner and for the purposes set forth.

BASE PIECE—Peter S. Ebbert, of Chicago, Ill.: I claim the construction of saddles or base pieces for the stacks or chimneys of locomotives in which the feed water for the boilers is heated, the trough or receiver for catching the water or condensed steam that drips, and the waste pipe for conveying it away, as described.

HOOK FOR LABELS—Samuel B. Fay, of New York City: I claim the construction of tags or labels, substantially as described, by affixing thereto a hook so formed as to readily hook into the goods to be marked, and by the spring of its shank retain its position without being liable to become readily detached, as specified.

OPERATING VALVES OF STEAM PUMPS—Robert H. Fletcher, of Brooklyn, N. Y.: I claim enclosing the piston head within an inner cylinder which fits within the outside cylinder of the pump, said inner cylinder being somewhat shorter than the space between the outside cylinder heads, and so constructed as to alternately open and close the ports through which the water passes in and out of said pump, and operated by the piston, substantially in the manner described.

MAKING BOXES OF PAPER PULP—Arasmus French & Charles Frost, of Waterbury, Conn.: We do not claim the making of boxes and other articles from pulp, with a perforated mold and by means of a vacuum.

We claim, firstly, the method of disengaging the article when formed from the mold, by forcing air upon it as described, by bringing down the piston, or other equivalent means.

Secondly. We claim the use of the movable block, F, and the movable shell, with a cavity in it as represented in fig. 6, both block and cavity corresponding in shape to the boxes or articles made, and are used to receive them and preserve their shape, when they are blown from the mold.

Thirdly. We claim the circular groove, a a, in the rim, x x, (see figs, 2 and 3) and such a construction of the mold to which the plate is attached, as would be equivalent to it—the object of this groove being to receive the water which enters the cylinder through the perforated pulp, when the mold is deposited thereon, so that it may be drawn off by the stop-cock, b; whereas this water if permitted to remain and accumulate would, by the pressure o the air upon it, be forced through the sides of the article formed when they are blown from the mold. We claim no other parts of the machine as our invention.

ADJUSTING CARRIAGE SPRINGS—M. G. Hubbard, of Penn Yan, N. Y.: I claim, the double fulcrum iron with a changeable angle, constructed and arranged in the manner and for the purposes set forth.

STEAM PRESSURE REGULATORS—Wm. S. Gale, of New-York, N. Y.: I claim the arrangement of the groove F, in the piston B, in connection with the gasket, G.

MACHINE FOR SAWING STONE—John Grason, of Queenstown, Md.: I am aware that guides for governing the movements of saws in machines for reducing blocks of stone or marble to a tapering form; and, therefore, I claim: Operating double sets of saws arranged at right angles with each other, by means of the power-moving rack beam, G, combined with the rack frame, G', by means of the toothed wheel, L, which works upon the adjustable sliding beam, N, substantially as set forth.

REFRIGERATING PITCHERS—Franklin D. Hall, of Philadelphia, Pa.: I am aware that double walls and casings containing immediate strata of air, have long been used in pitchers and other articles of household economy as a means of intercepting and retaining heat.

I am also aware that hinged covers to protect the mouth or spout of vessels from which fluids are to be poured, as pitchers, molasses cups and such like articles, have been long in use—these contrivances I therefore entirely disclaim.

I claim, the arrangement of the tube or conduit-pipe and the spout with which it is connected, in the manner and for the purposes described.

PAPER CLIP—John L. Harvey & C. A. Mills, of Dubuque, Iowa: We claim, the attachment of the clip and spring to the outer cylinder, by which the clip can be raised or lowered, so as to accommodate to a larger or smaller quantity of paper—the effect of the spring upon the clip being the same in any position.

TURNING CARRIAGE AXLETREES—John Hennon, of Beaver, Pa.: I claim, the turning of spindles on axles for wagons, carriages, or all other similar articles, and the rule or principle of ascertaining the lines on the timber and of finding the centre in accordance therewith, and of so adjusting a movable centre or slide-point in any common lathe, as to give an axle any desired degree of inclination for the bottom or pitch line, and at the same time obtaining more or less gather at will, substantially as described.

BEDSTEADS—Silas Huddleston, of Cottage Grove, Ind.: I claim, the arrangement described and shown, consisting of the device D, a, a' b, d, e e', end rail A, c c' g, g g' and stop-pin, h, for the purpose of tightening and retaining the cord, c, which forms the bottom of the bedstead, substantially as set forth.

HARVESTERS—John C. Huermann & Jonathan Reeves, of Camden, N. J.: Having now described the nature of my invention and the manner in which the same is carried into effect, I wish it to be understood that I do not claim exclusively the employment of cams or projections on the driving wheel, in combination with levers for agitating the cutters of harvesters.

But I claim the wheel, with its projection, in combination with the levers H and H' and their scrapers, J, the rods I and I', lever J, and arms K, the whole being arranged and constructed substantially in the manner set forth, for the double purpose of clearing the projections from dirt and agitating the cutters.

RAKING ATTACHMENT FOR REAPERS—John C. Hicks, of Rockaway, N. Y.: I do not claim the general construction and operation of the described raking attachment, for I am aware that the same has been accomplished before.

But I claim, operating the rakes G and O, by means of the segment H and rack J, with pin C, attached in combination with slotted arm or crank K, and groove (e) in platform P, when arranged and operated in the manner and for the purpose set forth.

MATCH MACHINE—Lawrence Holmes, of Paterson, N. J.: Having thus fully described my Improved Match Splint Machine, I claim, first, the combination of the reeding-rollers, b, and separating rollers, d, as herein described.

Second, In combination with the die-plate, e, and knives, f, for completing the splint, constructed and operated substantially as set forth.

Third. I claim the shield, &c., employed in the manner and for the purpose described.

DISINFECTING PASTILES—Andrew Lanergan, of Boston, Mass.: I claim, a disinfecting pastile or composition, made substantially as described, so as to be capable of being ignited and burned, and while burning to evolve chlorine or hydro-chloric acid gas, either in a free state or so combined or mixed with one or more other gases, as to be capable of acting as a disinfecting agent.

GUN CARRIAGE—John Laurens, of Charleston, S. C.: I claim, the entire gun-carriage, it being totally different from any gun-carriage that is now or ever has been in use, with the sole exception of its carrying a gun.

NETTING MACHINES—John McMullen, of Baltimore, Md.: I claim, finishing the meshes of the net and tightening the knots by the simultaneous, longitudinal and lateral strain of pressure rollers and cloth beam, operating substantially as specified—the relative position of said rollers and beam being automatically preserved,

STEAM GUAGES—W. K. Miller, of Canton, Ohio: I claim, the arrangement of the siphon tube within the cement, holding tube or case, G, and both within the metal case—with transparent front—and thereby forming cement and transparent liquid chamber within the case, in the manner substantially as described and for the purpose set forth.

BRASS KETTLE MACHINE—O. W. Minard, of Waterbury, Conn.: I claim the method substantially as specified, of polishing or burnishing either of the surfaces of the metal during and by the rolling action, by causing one of the rolling surfaces to move faster or slower than the other, to produce a slip, as set forth.

And I also claim in combination with the forming and working rollers, giving to the carriage which carries the clamps with the disc of metal, a diagonal movement, substantially as described, to keep the inner surface of the metal in contact with the forming roller during the rolling action, as described,

MINCING MEAT MACHINE—Oren Moses, of Malone, N. Y.: I claim, the combination of the cutting-box, A, with the cutting cylinder and with the other parts of the machine, in such a manner that the position of the said box can be readily lowered, partially revolved, and then elevated again, for the purpose—causing the reciprocating movements of said box to so act upon the disks of the cutting cylinders so as to make them cut in transverse directions, within said cutting-box, substantially as set forth,

I also claim the combination of the comb, L, and its shaft, e, with the shaft of the cutting cylinder, in such a manner as to cause the teeth of said comb to act between the cutting disks on the rising side of the cutting cylinder, substantially as set forth.

BEDSTEAD—Ansel Moon, of Bristol, Wisconsin: I claim the application of this "lock-joint" (so-called) to the manufacture of bedsteads.

SWINGING SPOUT FOR FEEDING MILLSTONES—M. & C. Painter, of Owing's Mills, Md.: What we claim as new and useful in feeding grain to millstones, and desire to secure by letters patent, is—suspending the oblique eye, feeding tube H, by universal joint (b) from above, in combination with and for free rotation and universal movement of said tube by the revolving stone, A, for the purposes specified.

INDEPENDENT SECONDS' MOVEMENT FOR WATCHES—George P. Reed, of Waltham, Mass.: I do not claim applying to a watch or time-piece an "independent second mechanism," operated or driven by a motor or main-spring and train of gears separate from the main-spring, and train of gears for imparting motion to the hour and minute hands of such watch or time-piece.

But I claim the combination of the gear wheel, B, the ratchet, C, curved lever draw pawl, G, the spring, I, and the detacher, L; the whole constituting a mechanism applicable to the arbor of the index hand of a dial, and for imparting to the same an intermittent rotary movement, in manner and for the purpose specified.

REAPING AND MOWING MACHINES—John Reily, of Heart Prairie, Wis.: I claim, first, the method of raising and lowering the cutter bar, either from the driver's or raker's seat, or from both simultaneously by means of the rod (u) and lever (x), in combination with the lever X, substantially as described.

Second. I claim, bringing the driver's seat to the dragtongue, when combined with a brace pivoted to the axis of motion of the machine, substantially in the manner and for the purposes described.

MACHINES FOR MAKING AND KNEADING DOUGH—S. M. Ridgaway, of Si. Michael, Md.: I claim the combination of the fluted roller with a kneading-trough, shaped and combined so as to operate as described.

MACHINE FOR SWEEPING STREETS—D. H. Richards, of Georgetown, Mass.: I claim, the brush E, operated by means of the cam groove F, in the manner as substantially set forth.

Second. I claim the plate L, operating in the manner substantially as set forth, for the purpose of raising the brush upon the return stroke, when sweeping at the sides of the streets, as described.

CORN AND COB MILL—Cyrus Roberts, of Belleville, Ill.: I claim the method of rendering the grinding surface of the hull or concave (f) concentric with that of the ball (e) and of preserving this concentricity by mounting the revolving spider (h) between the arms of which the rim of the hull is secured and adjusted upon a neck or journal (g) formed on the under side of the ball, (e) in the manner and for the purposes substantially as described.

BALANCE GATE FOR FLUMES IN WATER POWER—D. Robinson, of Lenoxville, Pa.: I claim, the two sliding gates, B, B', placed at opposite sides of the penstock, A, and connected by bars, (c) substantially as specified.

BLASTING POWDER—Wm. Silver, Jr. of Wapwollopen, Pa.: I claim, the explosive compound described—consisting of rags or paper saturated and coated with a mixture of gunpowder, chloratc of potassa, and powdered, calcined cork, in about the proportions set forth.

LOCKS—Henry Isham, of New Britain, Conn.: I am aware that locks have been made in which a series of rotating tumblers are carried by the bolt in the direction of its line of motion, so as to make cogs on the said tumblers engage cogs on a series of slides previously set by the key, but in such locks the engagement of the tumblers with the key slides can only take place at the end of the throw of the bolt—and therefore I do not claim broadly the engagement of rotating tumblers with the key-slides by the throw of the bolt.

I claim, moving a series of rotating cogged tumblers at right angles to the line of motion of the bolt, by means of a slot in the bolt, or any equivalent thereof, operating on the shaft or spindle of the tumblers, substantially as described—whereby the cogs on the said tumblers can be made to engage the cogged racks on the key-slides, previously set by the key before the stop-pin on the bolt leaves the slots in the tumbler, and will so remain engaged while the bolt continues its movement to carry the said stop-pin to some distance beyond the periphery of the tumblers; so that in any attempt to pick the lock, the said stop-pin shall not rest against the peripheries of the tumblers, to admit of feeling—as it is called—to bring the tumblers in succession, to the required position to allow the lock to be picked, as described.

And I also claim, in combination with the method of operating the tumblers by the throw of the bolt and giving to the bolt the capacity to move after the tumblers have been engaged with the key-slides to carry the stop-pin some distance beyond the periphery of the tumblers, substantially as described—the employment of a stop or hold-fast, operated by the bolt to lock or hold fast the key-slides or tumblers, before the stop-pin on the bolt reaches the periphery of the tumblers, substantially as described—whereby the said slides and tumblers, if not previously arranged by the proper key, will become locked in their disarranged condition, before the stop-pin on the bolt can reach the periphery of the tumblers to feel when the tumblers are brought to the required position by a pick.

I also claim forming the bit of the key of a series of sector pinions, which may be shifted to change the combination or permutation, substantially as described, in combination with a series of cogged rack slides for operating the tumblers, substantially as and for the purpose specified.

And finally, I claim the notched collar on the key stem in combination with the lipped-spring at the entrance of the key hole, substantially as and for the purpose specified—whereby the key cannot be taken out of the keyhole without turning it entirely around, to give to the key-slide their entire range of motion every time the lock is opened and shut; and thus avoid the possibility of determining the required position of the key-slides, by the wear of the moving parts—which would be the case if only moved each time to the distance required for unlocking; particularly if the same combination should continue to be used for a considerable length of time.

BREECH-LOADING FIRE-ARMS—Benj. F. Joslyn, of Brooklyn, Mass.: I claim a sliding valve in a chamber, substantially as shown and described, for the purpose specified. Also combining the spring with the valve, for the purpose as shown and described.

GRINDING BUTT HINGES—Cyrus Kenney & Wm. Gurley, of Troy, N. Y.: We do not claim any part or arrangement of the described apparatus which has before been known or used.

We claim, the improvement of hanging the pinch-block or cam, a, on or to the elastic support, a' arranged in combination with the bed, B, and stop, G, substantially as described and for the purpose specified.

We also claim mounting the griper in the manner described, upon the rock shaft, C, arranged in combination with the grindstone, as set forth for the purpose specified.

MARBLE SAWING MACHINE—Henry Lawrence of New York, N. Y.: I claim mounting the two saw frames, each in ways on the side of the frame, substantially as described, in combination with and when such frame is provided at the ends, with slides fitted to slide up and down in separate ways, connected with the main frame by journals or stems, adapted to turn and slide in suitable slots, and there held and secured substantially as described—whereby the said saws can be set each independently of the other, to have its cutting and feeding motions at any desired angle, by simply turning or shifting the journals of said ways.

And I also claim in combination with the described manner of mounting the two saw frames in adjustable sliding frames adapted to shifting and turning ways, substantially as described, the mode of imparting motion to said saw gates by means of pitmen or connecting rods, hinged at one end to the saw gate, and at the other fitted to slide and turn in rockers mounted in and free, to turn in a rocking frame, which receives motion from suitable motor, substantially as described.

CURTAIN FIXTURES—James Stephens, of New York City: I do not claim simply the application of a coil spring to the shade roller, for the purpose of winding up the shade, for they have been applied in various ways.

But I claim attaching the coil spring to a swinging pendant, A, and connecting the same to the arbor, B, to which the shade roller, C, is attached by the pinion, E, and toothed wheel, F, the arbor having a ratchet, D, upon it, in which ratchet a pawl, H, attached to the pendant catches, the above parts being arranged substantially as shown, for the purpose specified.

STEAM PRESSURE INDICATORS AND REGULATORS—Wm. Mt. Storm, of New-York City: I have no claim to the use of a tube (which, admitting the steam within, saves the steam-case and stuffing-box; nor any claim to the double communication—hot and cold)—with any form of thermolat; nor do I lay any claim to the expedient of the buckling motion, whether of tube or bar, separately considered.

But I claim the joint combination, in the compact and practical form of construction and arrangement, substantially as shown of all three of these features in the same instrument, and by which combination only, can a satisfactory and perfect instrument be produced,

I claim the combination of a simple steam-tight metal tube, with a fixed and open (not steam-tight) frame or support in which both of its extremities are held stationary; while the motion of its middle, left free, is communicatrd to its works in such manner, or by a device combined with the instrument, as to multiply its range of action; the communication of the tube with the steam of the boiler, being separate and distinct, moreover, from that to the water-space of the boiler, and filled with a cold fluid; and so arranged as not to allow any circulation through it, of the heated water from the boiler, the instrument as a whole being substantially as described and shown.

I also claim, in combination with the tube, the "key-nut," or its equivalent, for the purpose explained.

COTTON SEED PLANTERS—J. A. Stewart, of Franklin, Ky.: I do not claim a rotating hopper or distributing wheel, irrespective of the form shown, for they have been previously used.

But I claim, the hopper or wheel, G, formed of the disks, a a', and zig-zag rim, b, provided with slots, d, substantially as shown, for the purpose specified.

I further claim, the hopper or wheel, G, in combination with the clearing-rod, or spike, H, arranged as shown for the purpose set forth.

MACHINERY FOR FELTING HAT BODIES—Joseph Thomas, of Brooklyn, N. Y.: I claim, giving the vibrating motion to the reservoir wheel, by the combined action of the screw and cam (or any equivalent device) when arranged and operating essentially as described for the purpose set forth.

FILTER ATTACHMENT FOR FAUCETS—Jas. H. Wright of New-York City: I claim, placing the filtering materia or medium, G, within the chamber, B, of the faucet, and above the pipe, I; and having a pipe, C, and cock, D, at the upper end of the chamber; and a pipe, E, and cock, F, at its lower end—substantially as described, for the purpose specified.

I also claim, placing the filtering material or medium, G, upon the bars, b, arranged as shown for the purpose specified.

GUARD FINGER FOR HARVESTERS—Walter A. Wood, of Hoosick Falls, F. Y.: I claim, the particular form and construction of the finger or guard, as represented, viz., with the forked cap. E, recess or depression, A, raised edges, a, a, and neck c, behind them; by means of which the cutting is facilitated, in the manner set forth.

MACCARONI SERVER—Albert L. Lincoln, (assignor to himself & Chas. M. Foss,) of Boston, Mass.: I claim, as a new and patent article of manufacture, the described "maccaroni server," as made with its teeth or prongs, arranged with respect to its blade, substantially as specified.

DRY LIME GAS PURIFYER.—Chas. F. Werner, of New York City, and Chas. Deutschmann, of Buffalo, N. Y.: I claim, the arrangement of the lime purifyer in the same vessel, or cooler, B, with the cooling pipe, when the said cooling pipe is arranged in form, below the purifyer; in the manner substantially as described.

HULLING AND SCOURING GRAIN, SEED, &c.—Oliver P. Stevens, of Cleveland, Ohio: I claim, first, the perforated fans, f, g, in combination with teeth set in the fan case, c, as described for the purposes set forth.

Second. I claim the arrangement of the upper section of the fan case, c, in its relation to the chimney, o, in combination with the fans, f, g, and guides, i, i', in the manner described for the purposes specified.

Third. I claim the adjustable guides or deflectors, i, i', combined as described and operating in the manner and for the purpose described.

Fourth. I claim the air passages or chambers, B, B', arranged in each end and on the top of the fan case, in connection with the vertical trunk, B'. as described and for the purpose specified.

Fifth. I claim the valve, f, operated in the manner described and in combination with the chimney, o, for the purpose specified.

MAGAZINE HAMMER FOR FIRE ARMS—James N. Ward, of the U. S. Army: I claim, the feed wheel, A, ratchet, B, and pawl, C, in combination with each other and the coil-chamber, M, in the hammer head; said wheels being so situated relative to the pawl, that the outer face of the feed-wheel shall be within the inner plane of the pawl cavity; the operation being as set forth.

I also claim, the combination of the core with the hammer, substantially as specified, for severing the protruding portion of the primer and closing the primer passages.

MOWING AND REAPING MACHINES—Anson S. Hatha way, (assignor to himself and Frederick Ruggles,) of Columbia, Me.: I claim the scythes, P P, when arranged in relation to each other, and operated by mechanism constructed and arranged as described. in combination with the peculiarly constructed and independent acting guards, Q Q, operating substantially in the manner and for the purpose set forth.

COMBING WOOL—William H. Walton, (assignor to himself and J. E. Winants,) of Brooklyn, N. Y.: I claim, first, the reversing comb, arranged substantially as described, for conveying the wool from the feed rollers past the cylinders and on to the endless chain comb, as set forth.

I further claim, in combination with the above named reversing comb, the brush in rear thereof, for the purpose specified.

I also claim the clearing bar for clearing the fibers of wool from the cylinder, i, before the comb reverses, when combined with the reversing comb.

RE-ISSUES.

SPIRIT LEVELS—Sylvester J. Sherman, of New York City. Patent dated July 19, 1853: I claim the spring catch, or known equivalent thereof, in this combination, to hold the level in place upon the square or ruler, in combination with the bearers, the latter being so formed in respect to the level that when they are placed upon a horizontal line the bubble will be in the middle of the glass, and thus a horizontal or a vertical line may be ascertained from a ruler or from a square, when said level is attached, substantially as set forth.

ADDITIONAL IMPROVEMENT.

PROTECTING BULWARK FOR WAR ASSELS—Wm. Ballard, of New York City: I claim the panels, E, and stancheons, D, arranged in relation to the promenade deck, C, and bulwarks of the vessel, substantially in the mode of construction and for the purposes set forth.

DESIGNS.

CLOCK CASE FRONTS—Nicholas Muller, of New York City.

CLOCK CASE FRONTS—Nicholas Muller, of New York City.

Mine of Alum.

The following is taken from the San Jose (Cal.) *Tribune*. With good coal and an abundant supply, California would soon go ahead of many of the older states in other mineral products than gold :—

"Within six miles of this place a valuable deposit of alum, one of unsurpassed richness has been found, and carefully examined by numbers of the steady citizens of our burg. The lead containing the ore is on the Penitencia Creek, about one mile above where it leaves the foothills of the mountains and enters the valley. The mine, if opened, could be easily reached by a good wagon road.

In company with two observant gentlemen, and also a geological friend, we have visited this place, and brought away a large number and variety of specimen ores. These samples were broken off from the outside of the vein, which, though not well defined, is from six to twelve feet in thickness, and appears as an outcrop near the base of a hill or perpendicular wall of rock, some fifty feet in hight, which juts into the bed of the creek. Upon the outside of the vein, where exposed to air, the alum appears as an incrustation, as pure and white as that which is obtained at the shops. The ore (aluminous schist) from which this efflorescence is derived, may be obtained by the tun and ship load, and is easily broken away with a common pick.—Where the rock is easily disintegrated, as in the present case, the usual process adopted by the manufacturer is to expose it in large heaps to the open air, occasionally sprinkling them with water."

Destructive freshets in France have rendered 40,000 inhabitants houseless.

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The Proposed Change in the Patent Laws.

One of the most faithful opponents of Senator James' iniquitous Patent Bill scheme, is the *New York Herald*. Since the first day that that wicked scheme was made public, the *Herald* has been active to expose its iniquities. We have already copied from its columns a number of valuable articles upon the subject.

The annexed review, from the same source, is a scorcher. It exhibits, in their true light, the practical evils that would be likely to ensue, should the Bill in question become a law. The *Herald* is entitled to the thanks of all inventors for the noble stand it has taken in their behalf.

[From the New York Herald.]

The New Law of Patents.

One of the fruits of civilization is the protection given by law to that species of property known as inventions. To encourage ingenuity and mental exertion when they are as well employed for the public good as for private benefit, the most civilized nations have adopted the plan of issuing for all such inventions, letters under the great seal, which, for a certain number of years, give their author the exclusive benefit of his skill and his labors. The English law, which is the exemplar of our own on this subject, requires that the machine, the operation, or the substance sought to be patented, must be new to the public, and something that may be reduced to the form of a vendible article. A mere philosophical idea cannot be patented. The practice under the law is very precise and formal, the delay in procuring a patent very great, and the expense of obtaining it very large. It is about six hundred dollars under any circumstances.

Our own system originated in the Constitution itself, that venerable instrument which seemed wisely to foresee all the important interests which required compromise or protection.

Under various acts of Congress, beginning with that of 1790, our system has been matured until it has approached perfection. We have a Commissioner of Patents and also a Model Office which has no rival in the world. The mode of application is simple, the expenses are light, and inventors have been able to secure their legal rights with but little delay.

In England, the expense attending an application for a patent is so great as effectually to check the spirit of invention, and the poor inventor retires from a contest where his ability is greater than the length of his purse. In the United States a contrary principle prevails, and the cheapness of the proceedings places every inventor within the reach of a patent. Thirty dollars is the fee for obtaining it. So large is the number of applicants that a great competition exists among them, and while this is the chief and perhaps the only difficulty we encounter under our laws, it is highly beneficial to the public.

The chief questions which have arisen have been those of infringement; but our United States Circuit Courts have ample jurisdiction to determine the right. The whole law is admirably laid down in the second volume of "Kent's Commentaries," and thus far the system has worked well.

But there is a class of persons who are never content with any established rule, and an attempt is now making in Congress to change its spirit and its form, its character, and its operations. Neither inventors nor the public have demanded any change in the existing laws, but the speculators in the brains of others have been busy enough.

The new bill is complex and crude. It is a dangerous enlargement of the powers of the Commissioner of Patents. For example, it gives the right, either to himself, or any one he may appoint, to issue subpœnas to compel the attendance of witnesses, to issue attachments, and to punish for contempts—this latter being one of the most dangerous and abused powers now known in this country, and which is already filling our prisons with its victims. This is a power which is bad enough, even when exercised by the most learned Judges; and it would be still worse, if every Deputy Commissioner—and the act contemplates an indefinite number of such persons—shall have this power. Imprisonment would be an every-day occurrence, and its duration, not defined by the act, would be limited only by the pleasure of the official exercising the authority.

The bill, in another section, contemplates the retaining in the Patent Office of the money paid in for a patent, if the application for it shall fail—thus swelling the funds of the department by the losses of the inventors, and, in fact, punishing the applicants for having made even an honest application. Under the present law, twenty dollars of the patent fees are, in such cases, returned. Only enough is retained to meet the expenses actually incurred in the examination.

Section fourth permits any person to obtain a patent if he will swear that his invention has not been discovered by any other person in this country, or published or printed in any publication, before the date of his application. Thus, if any one should hear secretly of a foreign invention, and chooses to take the oath required, he would exclude the real inventor abroad, and this latter would not be able to protect himself unless he made application to our Patent Office within two years from the date of his invention, or the date of the act itself. This would encourage a wholesale system of piracy, discourage honest American inventors, and lead to endless frauds and perjuries.

The sixth section limits the duration of a patent from its present term of fourteen years to five years, except in some prescribed cases; and if an extension to fifteen years is required, one hundred dollars more must be paid at the Patent Office. And this rule is to apply to all the patents now in force after five years from their respective dates.

Under the present economical law a patent may be renewed for seven years longer—making the whole term twenty-one years—for the sum of forty dollars. The new law, for a similar privilege, demands one hundred.

This is holding out large encouragement to inventors in humble circumstances! Highly paternal all this—highly democratic for the American government to tax poor inventors in this manner!

Under the sixth section, the assignee of a first patent has the right to the renewal, so that the inventor who may have been obliged to part with his invention for a mere song, will not be able to reimburse himself by an extension. Under the present law he may do so. During the last fourteen years about eleven thousand patents have been issued, and at least six thousand of them have been sold to capitalists.

The poverty of inventors is proverbial. They are unable, from the absorbing character of their pursuits to compete in the common business of life with men of less ability. They generally spend all their means in accomplishing their purposes, and they generally find themselves, at the very moment of success, compelled to part with their inventions to keep themselves from actual want. Under the present law, the inventors have the benefit of the renewal of their patents. If they live long enough, they may finally obtain their reward. Under the new law, this privilege is taken away.

But the bill is full of the most objectionable matter.

By the ninth section, the Commissioner of the Patent Office is authorized to appoint as many agents as he may deem expedient, thus furnishing him with a horde of followers whose services may be particularly useful about the time of an election; and to insure their obedience, the tenth section permits them to be removed at the Commissioner's pleasure, for what in his judgment may be gross misconduct or willful violation of the rules of the office.

The eleventh section abolishes the right of appeal to the Circuit Court, and provides for a new office—that of Examiner-in-Chief—who in the absence of the Commissioner performs his duty, entertains appeals from the ordinary examiners, and pockets three thousand dollars a-year for his trouble. When the Commissioner is at his post, as he must be nearly all the time, there will be but little to do for the money. Some compliant follower, some political tool, will probably find this a convenient berth.

The twelfth section contains a fee bill, drawn up so to increase the expenses of applicants, in many instances seven hundred per cent., for what now costs only $30, will, under the new law, cost $210.

But worse than this, there is another charge to be added—a fee of $100 for a confirmation of the patent. What chance will a poor man have at the Patent Office when the new law takes effect?

But further; the authority now vested in the Circuit Courts of the United States, is, by this act, placed in the hands of the Commissioner of Patents. He is to be the sole judge of the validity or invalidity of patents, and of the legal rights of contending parties.

But we have not time to dissect this bill as we wish. It is so worded that it gives fraudulent patents, after a short lapse of years, the same validity as the good. It makes it practicable for the Commissioner to disburse for printing annually, nearly a million of dollars—it increases his salary, and finally concludes with a number of sections drawn up so bunglingly as to defy analysis—

> Full of windows that exclude the light,
> And passages that lead to nothing.

The whole bill may be characterised as an attempt to increase the revenues, the expenses, the power, and the influence of the Patent Office, and to convert it practically into another engine of corruption. It complicates the whole system of obtaining patents, so much so as to make it necessary to employ an army of lawyers at the very outset of the application, and to keep them on hand all the way through. The meshes, loopholes, and private corners of the bill are enough to ruin any honest and unsuspecting applicant. The expenses of obtaining patents are enormously increased, frauds upon foreign inventors are encouraged and winked at, and the sons of genius who may have expected to be remunerated by a renewal of their patents, are to be sacrificed to their assignees, who, under the new law, are to take all, and are to enjoy property that they did not purchase.

Nothing can be more unnecessary or unjust than this bill. In pretending to obviate existing evils, it increases them ten-fold, and there is great danger that the log-rolling interest at Washington is too strong and the honesty of Congress too weak to stay its passage. It is highly necessary that the press should speak out on this occasion. Indeed, what mischief and oppression would not be practiced upon the people, at this very moment, under the forms of law, if it were not for the fearlessness and watchfulness of the independent press?

[For the Scientific American.]

Kiln Drying by Dry Steam.

I noticed an article in one of the late number of the SCIENTIFIC AMERICAN, on the preservation of timber by kiln drying, &c., which contains much that is valuable.

The properly seasoning of timber is an important matter—important, in particular, for the West, and in fact important everywhere. Too much improperly seasoned timber is used in the building of houses, machinery, implements, &c.,

In all of the new and thriving places in the West, and indeed elsewhere, it is very difficult to keep a stock of properly seasoned lumber on hand for such purposes; and the reasons are obvious. In the first place, the lumber is needed for use about as fast as it can be prepared by the mills, without laying by a stock to season.

Again, it requires a large amount of capital to be invested, and where money is often worth two per cent. per month, it is expensive to dry lumber in this way, since it will take at least two years to properly dry two and three inch plank.

Now suppose such lumber costs, in its green state, $25 per M (and it often costs more) and the money is hired to pay for it at the above rate; the interest alone will amount to 12 per M, while drying, while the damage that will accrue to the lumber, by checking, warping, and otherwise, from its exposure to the atmosphere, will amount to another large per cent. n the first cost. Besides, it is very difficult, if not impossible to make thick lumber perfect in the open air—even in a very long time.

In the article referred to in the SCIENTIFIC AMERICAN, mention is made of various ways of preserving timber, and a preference seems to be given to dry steam, as the most reliable agent for kiln drying. As I have had some experience in the use of dry steam for this purpose, it may be interesting to your readers to learn something of the facts in the case.

I commenced my investigations in the use of steam for kiln drying, for the purpose of drying corn and corn meal for shipment—corn being a great staple of the West, and could not be shipped even to the Eastern market, with safety without kiln drying.

The hot air kilns which had been used for this purpose, were not only expensive, but they scorched and spoiled nearly every bushel of grain that was dried by their agency, while no flour or meal could be dried with them at all. The use of steam was substituted for hot air—to prevent scorching while drying. But on trial I found it very difficult to keep up a sufficient heat with the use of the steam. If the steam started from the generator at a heat of 212°, before it had reached its destination, and accomplished the object of its mission, it had lost a few degrees of its heat, and had become condensed, and must be returned to the boiler to be re-heated, or otherwise pass out of the steam box, with an entire loss of all of its remaining heat.

This I found would not pay, and I passed the escape heat from the arch, back and forth through the steam chamber, for the purpose, as I then intended, of keeping the heat of the steam up to 212°, not supposing, for a moment that I could superheat the steam without pressure, as that was against all of the standard authors on chemistry. But to my great surprise I found I was actually surcharging the steam with no pressure greater than that of the atmosphere, and heating it even to the point of ignition when I desired it. It thus accomplished all of my wishes as an agent for kiln drying grain, flour, and meal, producing as great a heat as I wanted, and was at the same time free from scorching or coloring the grain, flour, and meal,—not leaving so much as the smell of fire about

By this means, also, I was enabled to greatly reduce the expense of the kilns from the old hot air mode of constructing them. One kiln which I built for $130, would dry 20 bushels of corn meal per hour, in place of 10 to 15 bushels of grain per hour in a hot-air dry kiln which was used here during the Irish famine, which cost $2,500. A larger size, which cost $300 to build, on my plan, dried 60 bushels of corn meal per hour, or as fast as four pairs of burrs could grind it, at the rate of 15 bushels each per hour. It was judged capable of drying for six pairs of burrs at that rate, though no more than four were in use in the mill. The meal thus dried at an expense not exceeding 2 to 4 cents per barrel, has been used two years and a half after it was dried, and found to be as perfectly sweet as when placed in the barrel by the machinery of the mill, as fast as it was dried.

Having succeeded so well with my new agent in drying grain, flour, and meal, and being engaged in the lumber business in connection with trade, and also finding a great want of seasoned timber, I applied the same agent to this purpose with the most happy results, which will be given next week.

H. G. BULKLEY.

Kalamazoo, Mich.

Test for Mercury.

If a strong solution of the iodide of potassium be added to a small portion of any mercurial salt, placed upon a clean bright plate of copper, the mercury is immediately reduced, and forms a silvery stain upon the copper.—This re-action is decisive. By this method corrosive sublimate may be detected in a solution which is not acted on by caustic potassa or iodide of potassium. In a mixture of 1 grain of calomel with 200 grains of sugar, one grain produces a distinct metallic stain, which, of course, contains 1-200th of a grain of calomel. 1-400th of red oxyd of mercury may be detected in the same manner. Although this test acts on minute quantities they must be in a concentrated state.

The Members of the Academy of Natural Sciences, in Philadelphia, have contributed $250 towards a monument to Alexander Wilson.

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New Inventions.

New Corn Planter.

The accompanying engraving represents Fenwick and Boeklen's machine for planting and covering corn by hand, on which two patents have been secured, bearing dates respectively Aug. 7th, 1855, and May 6th, 1856.

Fig. 1 is a central section, showing the planter in the condition it is before touching the ground. Fig. 2 is a section at right angles to fig. 1, showing the parts in the condition they assume when the seed plunger is forced into the ground. Fig. 3 is a similar section to fig. 1, showing the parts in the condition they assume as the seed tube is being lifted up to draw the seed plunger from the ground.

The nature of this invention consists, first, in the conical valve on the lower end of the seed slide, whereby the discharge of the seed can be effected simply through the depression of the seed tube and resistance of the soil against the seed slide as the tube descends, and thus the necessity of employing loose connections for operating the seed slide avoided. It consists, second, in the hinged plates on the lower end of the seed tube, whereby a quantity of earth is always taken up, no matter what may be the nature of the soil, and dropped on the corn in a manner to cover it perfectly, as fast as it is discharged from the seed tube.

A is the seed box, consisting of a long tube of metal, four-sided or of other suitable form. This box is to be carried in the hand, and is fitted with a central slide, B, extending across it, the part of the box above the said slide is filled with corn, being separated from the lower part by fixed partition pieces, *a* and *b*, on opposite sides of the slide. Above the slide there is a stop piece, *c*, to check the upward movement of slide B; to this stop piece, C, is attached the stationary cut-off, *d*, furnished with a brush, *e*, to cut off from the upper part of the box or tube, A, the quantity of corn which is received within the hole, *f*, of the slide. To the partition piece, *b*, is attached a rigid curtain, *g*, in which is a hole, *h*, to allow the corn to escape from the hole, *f*, of the slide, B, into the lower part of the box, A. A spring, *j*, is applied between slide, B, and seed box, A, in such a manner as to force down the slide over the hole, *h*, and thus close said hole, while the machine is not operating, the downward movement of the slide being limited by a stop pin, *k*, which comes in contact with the partition piece, *b*. To the bottom of slide B is attached rigidly a plunger valve, C, which combines with a plunger tube, D, to form a plunger, by which the hole is made in the ground for the seed. The upper part of plunger tube, D, is made longer than the lower part, to fit easily to the interior of seed box, A, so as to be capable of sliding freely up and down therein; and the lower part is of the same size as the plunger valve, C, which is beveled to fit to a beveled seat in the bottom of the plunger tube.

Between the extreme lower part of seed box, A, and plunger tube, D, on each side, a plate or covering plate, E, is attached by a knuckle, *i*, in such a manner as to be capable of a swinging movement, to and from the plunger tube. The covering plates, E E, which are for the purpose of taking up a quantity of earth from the sides of the hole formed by the plunger, have their lower edges sharp and extend some distance below the bottom of the seed tube, but not so far below as the plunger valve does when the latter is kept down by the spring, *j*. The upper parts, *l l*, of the covering plates above the center of motion, *i i*, are inclined inwards towards the plunger tube, and the exterior of the plunger tube has two inclined projections, *n n*, on each side of its exterior, for the purpose of acting upon the covering plates in a manner that will be hereafter described.

On one side of the interior of seed box, A, is attached a spring catch, *p*, for the purpose, at a certain stage of the operation, of catching in a notch, *o*, in one side of the plunger tube, D, to connect the latter with the former. The operation of the planter is effected by a person taking it in one hand by the handle, walking over the field, and at certain distances dropping the lower end upon the ground.—The plunger, which, before touching the ground, is in the condition shown in fig, 1, enters the ground to a sufficient depth to make the hole before it is arrested by the increasing resistance of the ground, the covering plates, E E, remaining, in the meantime, spread open. After the arrest of the plunger the continued descent of the seed box, A, brings the inwardly inclined upper parts of the covering plates into contact with the inclined upper portions of the projections, *n n*, of the plunger tube, and causes the said parts, *l l*, to be thrown outwards, and the lower parts to be thrown inwards towards the plunger tube, and thus to grasp a quantity of earth between themselves and the plunger tube, and it eventually brings the spring catch over the notch, *o*, in the plunger tube, and locks the latter to the seed box or tube. The condition now described is represented in fig. 2. The operator now lifts the implement, but the plunger valve and slide are kept down by their own weight, aided by spring, *j*, and thus an opening is

IMPROVED CORN PLANTER.

formed between the plunger valve and bottom of the plunger tube for the corn, which has passed from the hole, *f*, through the hole, *h*, and into the plunger tube during the descent of the seed box or tube to escape into the ground. During the lifting of the seed box with the plunger tube locked to it, the earth, *q q*, which is within the covering plates, is lifted by them until a shoulder, *r*, of the slide comes in contact with, and forces out the spring catch, *p*, as shown in fig. 3, so as to liberate the plunger tube, which falls by its own weight, and its projections, *n n*, in passing the centers of motion, *i i*, of the covering plates throw out the lower parts thereof, and releases the earth, *q q*, which falls back into the hole in the ground just as the plunger valve begins to be lifted by the stop, *b*, acting on pin *k*, and covers the corn which has been deposited.

This machine seems to be a step in advance of many of the Hand Planters in use. It can be made by a common workman, is quite cheap, compact, and durable, and so constructed that it must plant regularly and surely as it enters the soil, clamp a quantity of earth, and, when raised out of the soil, lift and drop the same upon the seed, so as to cover it perfectly.

For further information about the purchase of State and County rights, address R.W. Fenwick & Reinhold Boeklen, New York City.

Gold Extracting Machinery.

The California *Mining Journal* (Grass Valley) of June 1st, quotes our remarks respecting various methods of extracting gold, on page 321, and says:

"We would unite with the Scientific American in again calling upon those interested in this important subject, to still further think, experiment, and to place the results of their experience before the mining public, to the end that each may profit, if he may, by the experience of others.

There seems at the present time to be a pretty general inclination on all sides to settle down upon the old-fashioned stamping mill, as decidedly the most economical and efficient mode of reducing the quartz, at least to a moderate degree of fineness. Experience, however, has fully satisfied the majority of miners that, in order to effect anything like a thorough separation of the gold from its matrix, the ore must necessarily be reduced to a much greater degree of fineness than in which it is left by the stamps. This must be accomplished by a subsequent and an entirely different mode of reduction. To accomplish this end many experiments have been tried, with varied success. Heavy rollers, Chilian mills, with various modified forms of construction, the *ball* process, "with little balls chasing big ones," and different grinding processes, have each in turn been adopted and discarded. There seems, at the present time, to be a very general inclination to get back to the first method of reduction, with arastras. Many companies now use them altogether, and a very great number who are using stamps are adding arastras, for the purpose of still further reducing the ores. We have not at our present command any definite results from arastras as used after stamps, but should be pleased to hear from any who have made experiments with this mode of secondary reduction."

Great Old and New Ships.

From all the information that can be obtained respecting Noah's Ark, its tunnage is calculated to have been about 12,000 tuns. The great ship of Ptolemy Philopater, of Egypt, was 6,500 tuns. The *Great Eastern*, recently illustrated in the Scientific American (No. 45,) is calculated to be no less than 20,000 tuns burden, and her iron planking will enclose a space inside of 2,993,593 cubic feet. Who says the world is growing old?

Agricultural Fairs.—Programme for 1856.

We subjoin a list of State Agricultural Exhibitions for the present year:—

Name.	Where held.	Date.
Vermont,	Burlington,	Sept. 9—12
New Jersey,	Newark,	Sept. 10—12
Canada East,	Three Rivers,	Sept. 16—18
Virginia,	Wheeling Isl'd,	Sept. 17—19
Ohio,	Cleveland,	Sept. 23—26
Canada West,	Kingston,	Sept. 23—26
Am. Pom. Society,	Rochester,	Sept 24——
Illinois,	Alton,	Sept. 30, Oct. 3
Michigan,	Detroit,	Sept. 30, Oct. 3
New York,	Watertown,	Sept. 30, Oct. 3
Pennsylvania,	Pittsburg,	Sept. 30, Oct. 3
California,	San Jose,	Oct. 7—10
Connecticut,	New Haven,	Oct. 7—10
United States,	Philadelphia,	Oct. 7—10
Wisconsin,	Milwaukie,	Oct. 8—10
Iowa,	Muscatine,	Oct. 8—10
New Hampshire,	———	Oct. 8—10
North Carolina,	Raleigh,	Oct. 14—17
Georgia,	Atlanta,	Oct. 20—23
Indiana,	Indianapolis,	Oct. 20—23
Maine,	———	Oct. 28—31
Alabama,	Montgomery,	Nov. 11—14
South Carolina,	Columbia,	Nov. 11—14

We are pleased to observe that the interest in these State Exhibitions, and in others of a local or special nature, but having the same object in view, does not flag. The number of exhibitions, and the amount and quality of the articles exhibited, promises to be superior, this year, to that of any preceding period. This is a striking proof of their good effects.

The State and other societies engaged in getting up these exhibitions, generally present premiums, consisting of small sums of money, to those exhibitors who, in the opinion of the judges, present the finest specimens for inspection. But is well known that exhibitors do not compete, on such occasions, for the mere purpose of winning the paltry premiums offered. It is the opinion of the Society, concerning the merits of their articles. which is of value to them. The official certificate of a State Agricultural Society, to the effect that a certain plow excelled, in good qualities, all others shown at the exhibition, and was therefore awarded the first prize, is of much more importance to the recipient than the small sum of money composing the prize.

Of the utility of giving prizes, of course there can be no question, but we are not certain that money premiums are always the best. The object of exhibitions is to disseminate practical knowledge among the people. This object should also be kept in view in the composition of premiums. We believe that the award of valuable books and publications, devoted to the spread of useful information, in lieu of money, is a good idea. It has been tried to a considerable extent and gives satisfaction. We hope to see it adopted experimentally, if not permanently by all our Mechanical and Agricultural Societies.

Flavoring Matters.

One of the most remarkable and interesting achievements of modern chemistry has been the preparation of certain liquids possessing the flavors of various fruits. So close indeed is the resemblance that we are almost warranted in supposing the flavor of the fruits to be actually caused by the presence of a trace of the above liquids. Several of these articles are employed in confectionery, and are manufactured on a tolerably large scale. The acetate of amylic oxyd, when dissolved in six times its bulk of alcohol, emits a most powerful and agreeable odor of pears, and is used in flavoring pear drops. The valerate of amyle, dissolved in alcohol, gives the scent and flavor of apples. Butyric-ether communicates the flavor of the pineapple, and is used in the preparation of various beverages.—Various other compounds of the so-called fatty acids, with the oxyd of amyle and ethyle, possess very pleasing odors.

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Scientific American.

NEW-YORK, JULY 12, 1856.

Scientific Explorations.

The territory belonging to the United States is of such vast extent, that much of it is unknown ground. Something, however, is doing every year in exploring the extensive plains, the lofty mountain ranges, the wildernesses, and river courses; developing new wonders in the mighty West, and adding greatly to our stock of useful information. Of this we have abundant evidence in the recently published Report of Capt. A. A. Humphreys, of the Topographical Engineers, upon the progress of the Pacific Explorations and surveys, to ascertain the most practical and economical route for a railroad from the Mississippi to the Pacific Ocean. The best route was found to be on the 32d parallel, which traverses the great Colorado desert for 132 miles. The officers of the survey made the discovery that this desert was the delta of the river, and was lower than that stream, which could be turned into it for irrigation, and thus convert 4,500 square miles of barren land into fruitful soil.

The want of water has hitherto been a great obstacle to an inland route to the Pacific. The surveying officers have devoted much attention to the obtaining of an adequate supply, and with some success. By one party it was found that a good common wagon road could be constructed from the Rio Grande down the San Pedro and Gila, and across the Colorado desert, and which could be supplied with water from common wells. Another party, under Capt. Pope, were charged to sink an artesian well on the Llano Estacado—an arid desert. They commenced operations in the latter part of May, last year, and at a depth of 360 feet water was reached, but it only rose 70 feet. The boring was continued, and 500 feet of tubing (all that the corps had,) was used. About the middle of the month of September at 640 feet, another powerful supply of water was reached. It rose 390 feet in a few minutes, when unexpectedly the marly clay below the tubing caved in and stopped its flow. It was attempted to remove the accumulation of water, by mud pumps, but after a continuous labor of twelve days and nights, no impression was made on it; and thus it now remains. This experiment proves, we think, that an abundant supply of water can be obtained, at least on that desert part of the route —where it is so necessary—from artesian wells.

Other artesian wells are to be sunk along the route, and Cart. Pope will renew his labors on the one described, when he receives the tubing and materials necessary to carry on the work. The water obtained at Llano Estacado was clear, pure, and palatable; and no impurities could be detected by tests applied by Dr. Shumard, the geologist of the party.

These surveys have developed the fact that the territory on the Pacific shores, is only a narrow slope of about 150 miles of arable land skirting the ocean for about 1000 miles, but its riches in minerals surpass comprehension. Rich veins of copper and antimony have lately been discovered, also great deposits of asphaltum. The sulphate of soda and the carbonate of magnesia have been found in great quantities, but no niter. Carboniferous limestone has been found in abundance at the San Francisco mountain, and this affords some hope that deposits of coal may also be there.

Thus far the surveys have developed a good wagon route to the Pacific, supplied with a sufficiency of water; and the grades and tunneling required through the Rocky Mountains, for a railroad, do not present such engineering difficulties as the railroad over the Alps, described in our columns last week. The cost of a railroad from Fort Smith, on the Mississippi, to San Francisco,—a distance of 2,025 miles, is estimated at $94,720,000,—a little over $46,000 per mile. The exploring surveys are still continued, and no doubt many new and interesting scientific discoveries will yet be made by the able corps of officers engaged in these scientific explorations.

A great chance for Inventors.

The annual production of Indian Corn is 600 000,000 bushels, nearly all of which is shelled by machinery; but the husking is done by hand. The expense of husking is estimated at 5 cents a bushel, or $3,000,000 a year! No less than 129 different patents have been granted for Shellers; but for Huskers, only *four* patents have ever been issued—two of which have long since expired. Not one of them is sufficiently practicable, we believe, to meet the wants of the community.

Corn Huskers are very much needed on every farm throughout the land. Here is a splendid opportunity for inventors, and we hope they will not be slow to improve it. The patent for a first-rate Husking Machine will be worth a large fortune.

Value of Patents.

Mr. B. O'Reilly, of this city, has sold a patent recently obtained, for an inflammable composition, to serve as a kindling for lighting fires, for the sum of nine thousand dollars.

Mr. J. W. Parker, of N. Y., informs us that he has made sales of his patent for Banding Pulleys, to the amount of one hundred and thirty thousand dollars.

Mr. S. G. Tufts, of Manville, Ohio, has sold a small portion of his Patent for Improved Portable Fence, for $20,000. Says he has only "just began." Patented April, 1856.

The Exit Fire Arms Company has been chartered by the Legislature of New-Jersey, and has purchased the Fire Arms patent of Mr. Joseph C. Day, granted 1854. Capital, two hundred and fifty thousand dollars, with leave to double the amount.

We have heard of several other patent sales, but as our information is not sufficiently positive, we decline to print them.

We shall be happy at all times to receive notice of the sales or purchase of patents, with a view to publishing the same. Such statements, when they come from reliable sources, are encouragements to those who possess any taste for inventing; they are also encouraging to those who have capital lying idle, awaiting investment to good advantage.

There never was a better time for inventors than the present. Few patents that are good for anything have to wait for purchasers, and the amounts sometimes realized are fabulous. The demand for improved machines, of all descriptions, is very great, and it increases much faster than the supply.

A single farmer of the present day, cultivating say 200 acres, if he were to conduct all his operations in-door and out, in the best and cheapest manner, would be obliged to purchase not less than *two hundred and thirty different patented inventions!* Agriculturists form, by far, the most numerous class of the population. They are numbered by millions. But in respect to mechanical improvements they as yet. in general, adhere to the "penny wise and pound foolish policy."

Instead of being on the alert to seize upon all new inventions that are calculated to augment profits, they often require to be patiently argued into a perception of their advantages. They buy a new contrivance for five dollars, make a clear one hundred dollars yearly by its use, and then complain of the extravagant cost of these "new-fangled notions."

But, notwithstanding their willful obtuseness, the number of patented inventions which they now annually purchase, amounts, in the gross, to an enormous number. With the increase of light and intelligence among them, comes a swelling demand for greater facilities and additional improvements. This is true not only of farmers but of all classes of people. Therefore, let no person gifted with the least talent for invention, discourage himself with the idea that the world is already too full of improvements, that there is no chance for him, or that the day has gone by for profitable realizations from these sources. Such is not the fact. Never, we repeat, were such golden opportunities presented to genius as are now spread before her. These opportunities are not diminishing but rapidly increasing.

In former years, the more valuable an improvement the more poverty-stricken was the inventor. But now-a-days this experience is reversed. The more valuable the improvement, the more speedily does the inventor become rich.

Recent American Patents.

Balanced Water Gate.—By Daniel Robinson, of Lenexville, Pennsylvauia —This invention consists in providing a gate at each side of the penstock, and having the gates connected by cross-bars; so that the pressure of the water on one gate will be neutralized by the pressure on the other, and both be allowed to move with little or no friction. The penstock is provided with a tube and valve, so arranged as to prevent the penstock from being ruptured by the sudden pressure of the water on entering it.

Improvement in Gas Purifying Apparatus.—Werner & Deutchmann, New York City.—This invention consists in the arrangement of lime purifyers within a cooling vessel containing water and conveying the gas to the purifyers, by a peculiar arrangement of a pipe in the bottom of the cooler, below the purifyers, the latter pipe serving for the condensation of the tar. It is well adapted for small gas works, or portable gas apparatus.

Blasting Compound.—Wm. Silver, Jr., Wapwollopen, Pa.—This compound is intended as a cheap substitute for gunpowder. Its character will be seen by reference to the claim on another page. The chlorate of potassa supplies a large quantity of oxygen to combine with the carbon that is liberated when explosion takes place, and the peculiar structure that is obtained by employing rags or paper, causes all parts of a charge to be ignited instantaneously. The compound is used in a cartridge. It is stated that one pound of it, at a price of one-half the same weight of gunpowder, possesses an amount of explosive force equal to three pounds of gunpowder. It is thus very cheap. A great advantage is also obtained by its explosion with very little smoke.

Window Shade Fixtures.--By James Stephens, of New York City.—Consists in having an arbor, to which one end of the shade roller is attached, fitted in a swinging pendant, fastened to the window-casing. Said arbor has a ratchet upon it, and also a pinion which gears into a toothed wheel, having a coil spring connected to its axis. The toothed wheel and spring are attached to the pendent. The several parts are so arranged that, as the shade is drawn down, the spring will be wound up, and retained by a pawl which catches into the ratchet, and releasing the pawl from the ratchet, the coil spring will wind up the shade roller and shade.

Cotton Seed Planter.—By J. A. Stewart, of Franklin, Ky.—Consists in employing a rotary hopper, corrugated or formed in a zig-zag state and in connection with a clearing-rod, so that the seed will be properly detached or separated from each other by the rotation of the hopper, and discharged through slots cut in the periphery thereof, into the furrow. This is a good invention.

Filtering Water Faucet.—By James H. Wright, of New York City.—Consists in having the faucet provided with two cocks, with a chamber between them; the chamber being divided into two compartments, by the filtering material and the plate and bars between which the filtering material is secured. The water-pipe communicates with the lower compartment, and the liquid is so guided in its entrance, as to sweep the under-side of the filtering material, and thus always keep it perfectly clean—the water drawn from the faucet in a filtered or unfiltered state, as desired. The object of having two cocks is to permit the drawing off of either filtered or unfiltered water. The water requires more time to pass through the filtering material than to issue direct from the receiving compartment, unfiltered.

Cording Bedsteads.—By J. Huddleston, of Cottage Grove, Union Co., Ind.—Relates to the cording of bedsteads, and its object is to facilitate the operation of drawing the cord taught, lessen the labor of performing the same, and simplify the means employed. A drawing would be required to explain its parts.

Improvement in Wagon Wheels.—By Wm. A. Ashe, of New York City.—Consists in forming a narrow tongue at the centre of and on the inner circumference of the tire, and a deep, narrow groove, of corresponding shape to the tongue, in the outer periphery of the fellies, for the purpose of securely fastening the tire on the wheel without the aid of bolts or holdfasts. Another purpose is to prevent the liability of the tire to loosen from shrinkage of the wood. The edges of the tire are made quite thin, so that by use they bend around and conform to the edges of the fellies, thus always keeping the latter in place.

Improvement in Grain Harvesters—By John C. Hicks, of Rockaway, L. I.—Consists in a peculiar meaus of operating the rake, whereby it is drawn over the platform of the reaper, turned around and thrown outward therefrom, then turned to the outer end of the platform to be again drawn inward or over the platform. A motion is thus communicated to the rake which is similar to that given by hand, and the grain is swept from the machine and deposited in regular piles upon the ground.

Feeding Grain to Millstones.—By M. & C. Painter, of Owing's Mills, Md.—Consists in feeding grain to millstones by means of tubes placed within the eye of the upper stone or runner and so arranged that the grain will not come in contact with the eye of the stone, but be conveyed directly down to the bedstone. With this arrangement the grain cannot as usual cling to the sides of the eye, in consequence of centrifugal force, and cause the eye to be clogged or choked thereby. This is an excellent improvement. It was fully illustrated and described in No. 25 of our present volume.

Improvement in Melodeons.—By Jeremiah Carhart, of New York City.—This invention relates to Melodeons in which two single or double sets of reeds are employed, with two sets of valves. It consists chiefly in a certain arrangement of mechanism employed in combination with two banks of keys, one or both sets of reeds to be played at pleasure, or both sets with one hand, and one with the other—thus effecting all the combination of which an instrument with two sets of reeds or valves is capable of producing. It is a valuable invention.

Improvement in Buck Saws.—By E. S. Clapp, of Montague, Mass.—The form of this improvement is the same as that of common buck-saws. The invention consists in having two bows at one end of the saw frame. Said bows are connected by a hinge or joint; one of the bows has a rack attached to it, which passes through a slot in the other bow and catches on the edge of a slotted plate thereon; the saw is connected to one bow and the straining-wire to the other; so that, by pressing one of the bows, the saw may be so strained in the frame, or loosened, with the greatest facility. This is quite a novelty, and a useful contrivance.

Resuscitation of Drowned Persons.

Dr. Marshal Hall, an eminent physician of London, gives instructions for the resuscitation of persons apparently drowned, at variance with the methods now in use. He says:—There is one great impediment to the restoration of the function of respiration, which is the falling back of the tongue across the top of the glottis, or entrance into the windpipe. In order to remove this, the patient is to be placed upon his face and breast, and the body is then to be turned slowly on to one side, and then returned slowly to its former position. This motion, whose effect is to cause a considerable amount of air in the lungs to be expelled and re-inspired, is to be kept up until breathing is restored, or all hopes of resuscitation from this source are abandoned.

The Oceanic Survey.

Lieut. Berryman has selected the steamer *Arctic* for the service of sounding the Atlantic, in order to ascertain the practicability of the project designed to be executed by the New York, Newfoundland, and London Telegraph Company, of laying a submarine cable between St. Johns, Newfoundland, and Vallencia Bay, on the south-west coast of Ireland. The steamer will be fitted up with all possible dispatch, and will soon be in readiness to proceed on her work.

The screw steamer *Himalaya*, belonging to the British Navy, recently made a passage across the Atlantic—from Halifax to Portsmouth—in 8 days, 3 1-4 hours; most extraordinary speed.

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(For the Scientific American.)

India Rubber Manufactures.

I have read the articles on India Rubber in the SCIENTIFIC AMERICAN with attention, and have the following remarks to offer:—

In the first article, you say "vulcanization is the submitting of a compound of rubber and sulphur to a high degree of steam heat."—This is not so. More than two-thirds in value of all the goods vulcanized in this country are vulcanized by dry heat, just as they have been ever since Goodyear took out his patent. With a few exceptions, the goods vulcanized by steam are heavy and coarse articles, such as engine packing, &c.

In regard to the Patrick Mackie business, he used sulphate of zinc in his solution just as painters use it in their oils—but the use of it was valueless, and positively hurtful. At that date they used unrectified spirits of turpentine; the addition of the sulphate of zinc, as any chemist understands, produces decomposition of the rubber; if that was so when the goods were unvulcanized, how much more deleterious its use would be now as a vulcanizer.

It is absolutely necessary, for the production of a good article in the wet way, that the solvent be as nearly anhydrous as possible; hence we use triple refined camphene, and if the sulphur should contain the most minute portion of sulphuric acid, the goods will not vulcanize; hence the application and use of the hypo-sulphites, which are compounds of the metals and sulphur in the condition most free from oxygen.

In your second article, your remarks in regard to Mr. Goodyear and Messrs. McIntosh & Co. are quite true and well put, and should be a lesson to all men who have invented yet are dilly-dallying about taking out patents. It is safe to say that McIntosh & Co. have made from £300,000 to £500,000 from Mr. Goodyear's invention.

Here again, however, you may say Hancock's method of vulcanizing by steam is a superior method. It is not so. Goods vulcanized both ways were thoroughly tested in the Crimea, and while the English steam cured goods were condemned, our American goods received the approbation of both French and English officials.

Vulcanization is one of those grand American inventions which mark the last few years of the scientific and industrial progress of the nations, and in this art we are yet far ahead of anything in Europe—this, from a close inspection a few months ago, I can speak understandingly of.

With the exception of three or four American factories recently started in France and Great Britian (just as much American as if they were in New York, both managers and employees being Yankees) and McIntosh & Co's. productions, such as packing, hose, tubing, &c., they know nothing of the art. It is amusing to read in their journals of improvements made from day to day—improvements which were known and in use in this country years ago.

N. Goodyear's patent granted April, 1845, was not so important as that of May following. C. Goodyear's patent of July 5th, 1845, was very valuable; and although you say such goods have not since been manufactured, yet if you examine the inside of a shoe you will get some light on the subject.

In the last remarks in the second article you again bring forward our old friend Patrick Mackie with his sulphuret of zinc matter. There is no sort of use talking about the merits of his invention, as the slightest chemical knowledge will suffice to show that a salt of the greatest oxydizing power in solution in a hydro carbon in which a pure solid hydro carbon (india rubber differs from all other gum, in being perfectly free from oxygen) is also in solution, the use of such a substance whether in natural or allotropic caoutchouc is always and essentially hurtful. Patrick Mackie, I think, will not pass down to posterity as a great inventor; and if the public has any money to lose, I don't think a more promising field to work can be found than to use his expired patent.

In conclusion, I have to observe that the real processes of producing vulcanized or allotropic india rubber are not understood by the public, the books not containing anything of value or truthful information, dealing in generalities they befog and mislead only.

Harlem, N. Y., July, 1856. J. T. T

Remarks on the above.—It has always been very difficult to obtain any information regarding the manufacture of india rubber fabrics from those engaged in the business, and the foregoing letter does not, we regret to state, furnish us with much that is satisfactory.

Most of the information given by us in the articles referred to, was obtained from the records of those who have secured patents for india rubber products, and who have been, or are, interested in such manufactures. On page 328, SCIENTIFIC AMERICAN, there is an omission of one word which we regret, it is *dry*, in connection with a *high* degree of *steam* heat, in explaining the vulcanizing process. But in the succeeding article, page 334, the credit of the discovery is given to Goodyear, who used dry heat. It still appears to us that steam heat must be the best for vulcanization. The superiority of American over English cured goods in the Crimea may not have been owing to the particular method of heating them. The heat of steam can be most nicely regulated, and it can also be applied dry. A high degree of steam heat is employed to dry many articles; and in France such heat is used for making gunpowder charcoal. If properly applied, we cannot conceive how any fears need be entertained respecting the formation of acid in the vulcanizing process.

In the above letter, wherein it is stated that the least portion of sulphuric acid prevents vulcanization, it appears to us that Mr. Goodyear's first patented curing process was based on the opposite principle; as it embraced the use of acidulous nitrate of copper, and it was used in conjunction with sulphur, in Hayward's process.

In reference to the use of sulphate of zinc combined with india rubber (either wet or dry) we conceive it is public property, and we tended to enforce this idea, because it has been claimed by others subsequent to the date of the first patent. Chemists, as asserted above, do not understand that sulphate of zinc mixed with india rubber decomposes it, any more than they understand that sulphur and heat, as asserted, do not produce a new compound with india rubber, but simply a change of its condition—rendering it allotropic.

The sulphate of zinc is used as a preservative to prevent decomposition in timber; it is also used in the art of dyeing, to render some colors more permanent, and when dry it is not easily affected by heat. Is it because the metal zinc is so easily oxydized that a chemist should infer that its sulphate would decompose india rubber? If so, how comes it that a patent was granted to D. McCurdy, in 1851, for the use of the oxyd of the most oxydizable metal known—potassium. He received a patent for the use of potash, a very deliquescent salt, (sulphate of zinc is not) which, he asserted, produced vulcanized india rubber without sulphur. These chemical inconsistencies we leave to india rubber manufacturers to reconcile.

India rubber is stated to be a pure hydrocarbon, and so is gutta percha, according to the analysis of Dr. Maclagan. The *books*, indeed, may, as our correspondent asserts, be wrong regarding vulcanized india rubber, for we have not found one that asserts it to be allotropic caoutchouc We would like to see the records of the analysis that proved this, and for the benefit of chemical science it ought to be given to the public as it would certainly be a very interesting fact for chemists. Until this is done, chemists should not be blamed for considering vulcanized india rubber a compound, not an allotropic condition of caoutchouc.

The Philadelphia Mint.

A statement of the operations of the Mint for the month of June, shows that the gold bullion amounted to $321,306; of silver $76,800; total deposits $298,100. The coinage for the month in gold was $1,315,459; in silver $445,000; three cent pieces, $3,660, and in cents, $3,013 88. Entire coinage of the month, $1,767,132 88. The whole number of pieces coined was 2,570,074.

Notes on Patented Inventions.—No. 13.

Friction Matches.—Small blessings are often times the best, and this we think is true respecting igniting matches. They are now so common that we seldom reflect on their real value—not price—as promoters of our comforts and pleasures. Those among us who remember the time—and it is not many years ago—when the flint, steel, and tinder-box, were the only common appliances for kindling fires, &c., cannot be too thankful to the first inventor of friction matches; but who he was is now unknown. Phosphorus is the principal igniting ingredient in the composition used for matches. This peculiar, inflammable substance was discovered in 1673, and it was employed in many ways prior to its application in matches, to produce instantaneous light. A piece of phosphorus was kept in a bottle, and a common sulphur match being dipped into it, then exposed to the air, ignited. This plan was in limited use for a great number of years. For a long time sulphur matches tipped with chlorate of potash were used; then they were improved by being dipped in a paste of chlorate of potash and sulphuret of antimony mixed up with starch. They ignited when drawn across sand paper. In many respects these were defective, inasmuch as their smell was offensive, and they ignited with a spirting action. The first American patent granted for the manufacture of friction matches, was in October, 1836, to Alonzo D. Phillips, of Springfield, Mass. His patent embraced the use of chalk, phosphorus, glue and brimstone. In June, 1837, John Hatfield of Stillwater, Saratoga Co., secured a patent for dipping matches, by placing them in a conical tube, with their sulphur ends outwards. This method separated the tipped ends. On Nov. 16, 1839, John Stevens of New-York city, obtained three patents for improvements in friction matches. The first was for covering them with a coating of varnish, gum mastic dissolved in turpentine, to prevent them from accidental ignition, and injury from moisture. The second was for the use of litharge and carbonate of lead, mixed with phosphorus, and the third was for dispensing with the use of sulphur, by substituting niter, to obviate the unpleasant sulphur smell. The matches were saturated in a strong solution of niter, dried, and then dipped into a phosphoric compound. In Dec. 1841, N. T. Winans and Theo. & Thad. Hyatt, of New York secured two patents for friction matches; the first was for matches rendered water-proof, by a combination of glue with shellac—the disclaimer connected with this patent rendered it of little consequence, and the second was not much better; it was for the use of shellac varnish, when made with an alkali—which is an inferior varnish to withstand moisture, to that made by alcohol—which was disclaimed.

In May, 1842, G. W. Carleton of Maine, obtained a patent for making a safe, ignitable composition for matches, capable of being exported, placed about a fourth of a pound of phosphorus in a large bottle, then covered it with a strong solution of gum arabic, and then immersed the bottle in hot water until the phosphorus was fused—more gum arabic was then added, (about two pounds altogether,) and the whole violently shaken, to mix them intimately—two pounds of subcarbonate of potass; one of saltpeter and one of sulphur were then added, and the whole ground together like paint in a mill, and put up for future use—simply by dipping the splints into it, and then drying them. Of late years, the only improvement made in compositions of matches, is that of Prof. Scrotter, of Vienna, who, by heating the phosphorus—out of contact with the air—prior to using it in the match composition, rendered it more safe The practical results of Mr. Carleton's process appear to us to be of the very same nature. In July, 1843, W. K. Ashard of New-York, obtained a patent for making matches without sulphur—for resisting the action of moisture—as follows: The splints were first saturated in beeswax; then dipped into a composition of 1 part phosphorus, two of chlorate of potass, five of sulphuret of antimony, and two gum shellac varnish. These are very excellent matches in cold weather, but are liable to become soft, and then refuse to ignite in warm weather. In March, 1843, Stephen Blaisdale of Me., secured a patent for dipping matches into a paste of sulphur and phosphorus, made fluid by glue. It had been customary to dip the splints first in the sulphur, then, after it was dry, into the phosphorus.

The match business is carried on to a great extent in New-York and other places; the splints are all made with great rapidity by machinery, and other parts of the labor is performed by machines. The following is a good composition for matches:—Phosphorus, 4 parts, by weight; saltpetre 10, fine glue 6, red lead 5, smalt 2. The glue is first made into a smooth jelly, with water—then the phosphorus is carefully mixed with it, at a heat of 140° Fah.; after which the saltpetre is added—then the red lead, and lastly, the smalt. The matches, in bunches, are first dipped in sulphur, then dried—then dipped into the phosphorus composition. This composition makes very good matches; it is the common compound of the German makers.

Great Trial of Mowing Machines.

A very interesting trial of mowing machines took place at Hempstead Branch, L. I., on the 30th ult., under the auspices of the Queen's County Agricultural Society. The field for operation was heavy clover, and seven machines contended for the prizes, amid a very large concourse of farmers and others. The following were the rules laid down by the seven judges:—

"They will take into consideration the clearness of cutting; lightness of draft; simplicity of construction; durability, and the least liable to get out of order. The speed of the horses is not to exceed an ordinary slow walk. No trotting will be allowed."

Half an acre was allowed to each machine, and before they had completed their work, a dynometer, imported by Mr. Allen, was attached to each in succession, and the power required to operate them was ascertained to be as follows:

	Length of Cutting Bar.	lbs. draft
Allen's	4 feet 8 inches	336
Burrall's,	4 " 8 "	321
Dietz & Dunham's,	4 " 8 "	348
Manny's,	4 " 10 "	392
Manny's (4 wheel)	4 " 10 "	438
Whitenack's,	4 " 11 "	388
Weeks',	4 " 8 "	340

After some discussion, the judges declared their belief that a number of the machines were equal in merit, and concluded to decide by asking each judge which machine he would prefer to buy. This was tried, and they stood in twos for different machines, and the choice was made of those for the first and second premiums, by the vote of the odd one. They finally agreed to report as follows:

"The Committee, after deliberation, report Burrall's machine as of the lightest draft, but not doing as good work as some of the others. They recommend Allen's machine to their fellow farmers. They award the first premium to Manny's Improved; the second to Whitenack's, and the third to Weeks'."

The Committee wished it be understood with reference to the machines above named, that, with the exception of Burrall's, they considered them so nearly equal that they would not have made any distinction had it not been required.

The Consumption of Ice.

The ice business has grown into a very important branch of trade in this country. The city of Boston, where this commerce may be said to have had its origin, is still the chief port for its exportation. The amount exported from there, last year, exceeded one hundred and fifty thousand tuns, of which at least two-thirds was consumed in the southern cities, the remainder being sent to South American and West Indian ports. The annual domestic consumption of ice in the chief cities of the United States is estimated as follows:

Boston, 60,000; New York, 300,000; Philadelphia, 200,000; Baltimore, 45,000; Washington, 20,000; Charleston, 15,000; Mobile, 15,000; New Orleans, 40,000; St. Louis, 25,000, and Cincinnati, 25,000 tuns.

In the smaller towns, especially in those where water is introduced by reservoirs, the consumption of ice is about two-thirds as great in proportion to their population as in the larger cities.

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TO CORRESPONDENTS.

H. K. Van D., of N. J.—The only test of the evaporative quality of your steam boiler, is the amount of water it can raise into steam with a pound of coal in one hour. Have you tried the experiment? If not, do so as soon as possible.

H. E. K. of Conn.—The sketch of your knitting machine improvement has been examined, and we think that the arrangement of the needles and locking bar is a new contrivance. If you can make this machine operate as well as you hope, it will have an extensive sale. There has been during the past year considerable demand for knitting machines of simple construction, capable of general domestic use, like the sewing machine. You had better send us a model of the machine. Our circular of instruction will advise you in regard to the proper size of the model.

D. V., of Ind.—Your wheel would not move in the box at all, because water has no buoyancy, as you seem to suppose, to rise from the bottom to the top of the box, in order to drive the wheel.

N. F. P., of Conn.—We are not acquainted with any pure blue coloring matters for which alcohol is a proper solvent.

G. McD., of U. T.—The flowers of sulphur are produced by distilling stick sulphur in a retort at 752 degs. Fah. The flowers of sulphur are condensed in a small chamber at the neck of the retort; this chamber is maintained at a heat of 250 degs. Fah. Roll sulphur is made by casting it in molds while in a liquid state. It would require a long letter to give you the necessary information for making bar soap containing rosin,

H, M. B., of N. Y.—Door latches are japanned black by the use of black copal varnish; then they are baked in an oven.

C. H. B., of Pa.—We can furnish you with Vols. 9 and 10, of the Sci. Am. bound, for $2·75 each.

S. A. V., of O. T.—A lathe for turning irregular forms, such as lasts, spokes, axe helves, etc., is not adapted for plain work. J. S. Quimby, of Newark, N. J., is the proper person for you to address in regard to a spoke-turning lathe.

H. B. H., of Ohio.—Whenever your model reaches us we shall attend to your case.

A. R., of Mass.—The sewing machine and also the book paging machine patents have been negotiated in England and France for large sums. These two countries afford large scope for good inventions. We think you would do well to patent your invention in those countries, although you must judge of the matter without urging on our part. As a general rule, any invention useful in this country is equally valuable in England, France, Belgium and Austria.

R. C., of Ohio'—We would rather see than hear of your perpetual motion; the thing is impossible. You intend to gain a power from gravity: it is the very power that will stop your machine.

P. F. P., of N. Y.—If it is a dwelling house you are building we advise you not to put on a composition roof We only recommended the composition pitch roofs for cheap houses, such as out-houses. Rather put on a shingle roof.

Wm. Slocumb, of Milford, Mass., in noticing a late article in the Sci. Am. upon the subject of Artificial Guano, maintains that he can manufacture a fertilizing agent containing all the chemical constituents of the Peruvian guano, and at a much less cost. Let Mr. Slocumb go on and demonstrate that he can do this, and he will meet with success, and confer a great boon upon agriculturalists.

W. B. L. of La.—Your letter covering $20. for having a model of your cotton-gin constructed, is at hand. The drawing you send, will be ample to get the machine up from, we should think—although we have not yet submitted it to the model maker.

P. W. of San Francisco.—The balance of funds in our hands—67 dollars—we remitted to Mrs. S——, at Baltimore, on the 30th ult., by express, with instructions that she should acknowledge to you its receipt.

P. M. of Texas.—Ice can be produced by artificial means, but not in small quantities for family use, by any known means which are economical and within the reach of all. If any one could place "within the reach of every family, a small apparatus for making ice, at a cost of about 5 cts. per pound,' it would be a great boon. The receipt to which you refer was a humbug—we doubt not, a trick to gull the public out of money.

M. M. of Pa.—You ask why we are now silent in regard to the Woodworth Patent Extension. It is only because we have already devoted sufficient space to this subject, to stir up the energies of those who are opposed to it, and it is for them to roll on the ball now so effectually put in motion. It is quite probable that Congress will adjourn in about four weeks. During this time let the opponents of this scheme continue their correspondence with members of Congress with increased vigor. There is danger that this iniquitous scheme will be rushed through in a hurry at the tail end of the session. If this can be prevented the patent will expire before Congress meets again—December. We shall do all we can to bring this patent to a dead halt—on the 6th of December next. Pour in the letters upon the members of Congress. and let them feel the might of public sentiment.

C. Good & Son, Fort Des Moines, Iowa.—Wish to procure the best machine in use for cutting out lath.

W. G. of La.—Rosin oil is good for many purposes, but the gum must all be removed to render it fit for lubrication. It is mixed with dry hydrate of lime, and made into a grease, and then used for lubrication in many places. The remarkable cheapness of this oil renders its sale extensive; but it is not so good for illumination, lubrication, or painting, as lard, sperm and linseed oil. We have seen some very fine burning samples of it, however.

C. C., of Ohio—The advertisement "1000 young men," which appears in another colomn, was published a few weeks since, and some of our readers have written to us complaining that they wrote to the box named (enclosing a stamp) but failed to receive any attention, and ask of us an explanation. We can only say that the advertizer has given us no explanation as to the nature of the "no chance, new, easy, useful, honorable business," therefore we are ignorant of his intentions. He signs himself M. J. Cook.

Asa H. Hursey, Peaslington, Miss., wishes to purchase a machine for turning axe helves. Will some of our readers please to inform him. We have almost daily applications for machines for turning irregular forms. If there are any manufacturers of such machines in the United States, they are blind to their own interests in not advertsing them in the Sci. Am.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, July 5, 1856:—

W. & B. T., of Mass., $20; W. L. & Co., of Ky., $25; S. Z. H., of Texas, $20; J. R. M., of O., $25; R. W. T., of N. Y., $50; W. H. B., of Ind., $150; J. R., of Pa., $25; W. S., of O., $30; W. & B., of O., $25; H. G., of N. Y., $25; J. B., of Ill., $30; McN. C. and S., of N. Y., $250; E. E., of Ill., $30; W. & St. J., of N. Y., $25; A, O. B., of Ky., $25: C. W., of Conn., $30; J. S. S., of Conn., $30; G. S., of N. Y., $25; L. H. S., of Mich., $35; W. S. P., of Mass., $25; E. D. B., of N. Y., $30; J. C., of Ind., $30; G. W. G., of L. I., $25; J. N., of N. Y., $25; J. A. B., of N. J., $25; J. B. C., of Ill., $20; J. & R. S., of N. Y. $10; W. G, H., of Pa., $45; A. C., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 5:—

J. McA. of Ga.; W. S. of Ga.; J. H. of Ky.; W. & B. of O.; J. R. M. of O.; R. W. T. of N. Y., 2 cases; H. G. of N. Y.; W. T. Jr. of Mass.; A. R. of N. Y.; C. S. P. of Conn.; W. & St. J. of N. Y.; A. O. B. of Ky.; G. W. G of L. I.; J. N. of N. Y.; T. R. B. of N. Y.; G, S. of N Y.; E. S. W. of Ill.; J. A. B. of N. J.; W. B. of Ill.; W. S. P. of Mass.; W. G. H. of Pa., 2 cases; J. & R. S. of N Y.; A. C. of N. Y.

Important Items.

To the Unfortunate—We are no longer able to supply the following back numbers of the present volume Nos. 6, 12, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 34, 35, and 37. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

Models—We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

Patent Claims—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

Receipts—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Literary Notices.

The Wife's Trials is a thrilling novel by the author of the Jealous Wife. Published by Fetridge & Co., New York and Boston.

James J. Mapes, L. L. D.—President of the Mechanics Institute, Vice President of the American Institute, late Prof. of Chemistry and Natural Philosophy in the National Academy of Design, N. Y., Prof. of Chemistry as applied to the useful arts in the American Institute; Member of the Lyceum of Natural History, N. Y., and of the National Institute, Washington, D. C. Honorary Member of the Scientific Institute of Brussels, Royal Society of St. Petersburg, Geographical Society of Paris, Artists Fund Society of Philadelphia, and of many of the Horticultural and Agricultural Societies of Europe and America. We have received a copy of a well engraved good-looking portrait bearing the above titles. From some unexplained reason one of the most well known of the Professors appendages is omitted from the list, to wit., Professor of Super-phosphate of Lime, as applied to the Verdant.

Blackwood's Magazine for this month contains eight original articles, the first being the commencement of a new story called The Three Gifts, the others being of varied character, but all excellent. One on Our Alliance contains something of deep interest to every American. Winter Sketches by some observing traveler presents winter life in many of the old cities of Europe in a most graphic manner. Published by Leonard Scott & Co., No. 54 Gold street.

The Knickerbocker Magazine—The July number of this sterling work is one of unusual excellence.

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IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had Ten years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the Scientific American. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.

American and Foreign Patent Attornies, Principal Office 128 Fulton street, New York.

THE AUBIN PORTABLE GAS WORKS are now admitted to be the best known, whether for private houses or for villages, because of their simplicity of construction and operation, their freedom from smell, and their unequalled economy; they do not require mechanical skill or constant attendance; they will work night and day if required—never clog the pipes, and cannot explode; they generate gas from any material containing it. These great advantages, in connection with the fact that with a working plan any experienced worker in metal can set up the works, make rights under our patents a safe and profitable investment. Parties in search of business will do well to investigate. If they do they will buy. We refer to our works in operation on the steamer Isaac Newton, at the Delavan House, Albany, and in many other places. In a few weeks they will be in use for several villages now in negotiation. For further information apply to N. AUBIN, No. 358 Broadway, New York, or H. Q. HAWLEY & Co., Albany. 45 4

BARREL AND KEG HEAD TURNING AND Planing Machine, N. W. Robinson's patent Keesville, N. Y. This machine cuts the head out and planes it all at one operation, and will make from 300 to 400 per hour. 44 5*

SOMETHING WORTH KNOWING—The two patent rights of Fenwick and Boeklen's Hand Corn Planter for sale at $2,000. State rights from $100 to $150. County rights and one machine, $25. FENWICK & BOEKLEN, New York City. 1

NORRIS WORKS, Norristown, Pa.—Inglis, Carson & West, Iron and Brass Founders, Machinists, Boiler Makers and Steam Engine Builders—Manufacture Cornish Pumping Engines of an improved construction for mines and Water works, of any capacity. All kinds of Mining Machinery, Sugar Mills, Propeller Engines for Canal Boats, Blowing Cylinders, and all heavy machinery required in the Engineering business generally.
ANDREW INGLIS,
RICHARD R. CORSON,
43tf JOHN WEST.

LAWRENCE SCIENTIFIC SCHOOL—Harvard University, Cambridge, Mass. The next term will open on Thursday, Aug. 28th. For catalogue containing full particulars address E. W. HORSFORD, Dean of the Faculty. 42 8

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM. BURDON, 102 Front st., Brooklyn. 41 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 41 tf

1,000 YOUNG MEN of small means can make over 100 per cent. at home or abroad. Profits certain—no "chance." Business new, easy, useful, honorable. Apply (inclosing a stamp) to Box No. 533, Detroit, Mich. 44 2*

THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION Respectfully announce to the public their eighth Great Exhibition of American Manufactures and Mechanic Arts, to be opened at Faneuil and Quincy Halls, in the City of Boston, on Wednesday, the 10th of September. New inventions, improvements in the arts, and specimens of rare handiwork in every department of industry will be welcome to the Halls; and every facility will be afforded for a good display and the proper care of contributions. Medals of gold, silver, and bronze, and a new diploma designed by Billings, will be given to those whose articles merit such awards. Communications from those who wish more particular information, and from those who will require much space, may be addressed to the subscriber.
38 6eow JOSEPH L. BATES, Secretary.

HARRISON'S GRIST MILLS—20, 30, 36 and 48 inches diameter, at $100, $200, $300, and $400, with all the modern improvements; Bolters, Elevators, Belting, &c. &c. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Apply to
32 eowtf S. C. HILLS, 12 Platt st., N. Y.

MACHINERY—S. C. HILLS, No. 12 Platt street, N Y., dealer in Steam Engines, Boilers, Planers, Lathes Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines, Woodworth's and Daniel's Planers; Dick's Punches, Presses, and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c 26 e3w

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Sailnometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc.
CHARLES W. COPELAND,
27 eowtf Consulting Engineer, 64 Broadway.

BULKLEY'S PATENT DRY KILNS, by super heated steam, will dry grain, flour, and meal, without scorching, at a cost of two cents per barrel. Also green inch lumber in 12 to 20 hours. Circulars sent free on application. H. G. BULKLEY.
44 3* Kalamazoo, Mich.

IRON FOUNDER'S FACING MATERIALS—Viz. Sea Coal, Hardwood Charcoal, Lehigh Coal, Soapstone, and German Black Lead finely pulverized; also Core Flour, Fire Clay, Fire Sand, and Fire Bricks, for sale by G. O. ROBERTSON, 135 Water st., New York.
44 4eow*

CIRCULAR SAWS—We respectfully call the attention of manufacturers of lumber to the great improvements recently introduced in the manufacture of our Circular Saws. Being sole proprietors of Southwell's patent for grinding saws, we are enabled to grind circular saws from six inches to six feet with the greatest accuracy and precision. The impossibility of grinding a saw without leaving it uneven in thickness has always been acknowledged by practical saw makers. This causes the saw to expand as soon as it becomes slightly heated in working. When this takes place the saw loses its stiffness, and will not cut in a direct line. We will warrant our saws to be free from these defects; they are made perfectly even in thickness, or gradually increase in thickness from the edge to the center, as may be desired. As there are no thick or thin places. the friction on the surface of the saw is uniform, consequently it will remain stiff and true, and will require less set and less power. Will saw smooth, save lumber, and will not be liable to become untrue. This is the oldest establishment now in existence for the manufacture of circular saws in the United States, having been established in the year 1830. Orders received at our Warehouse, No. 48 Congress st., Boston.
44 13 * WELCH & GRIFFITHS.

REED'S PATENT CHRONOMETER ENGINE. This is an improved Steam Engine for which Letters Patent were granted to John A. Reed, of New York, Jan. 9, 1855. The nature of this improvement consists in the increase of power about 20 per cent., and reducing the weight of the engine one half. The saving of fuel is effected by letting the steam in on both sides of the cylinder; doubling the size of the port, and balancing the pressure, removing the friction and weight of the slide valves, eccentrics, cross heads, connecting rods, &c. The exceeding simplicity of this engine renders it much more durable and easily managed than any other, and when placed upon the boiler with wheels it is portable though effective. These engines received the First Prize Medal at the Great Exhibition in Paris. There are about seventy-five of them now in oparation, all giving great satisfaction.

1-horse Engine	-	$150.	Boilers and fittings		$125.
3 "	" - -	200.	"	" -	150.
6 "	" - -	300.	"	" - -	300.
8 "	" - -	400.	"	" -	400.
10 "	" - -	500.	"	" - -	500.

All sizes from 1 to 100-horse power at the shortest notice. Also Reed's Patent Steam Pump, the simplest and most durable one in use, for raising water or supplying boilers. Further information may be had by addressing TOUSLEY & REED, 95 Maiden Lane, New York. 24 1amtf.

$1,000 A YEAR—An Agent is wanted in every town in the Union to manufacture an article of daily consumption; can be manufactured at the Agent's dwelling; secured by copyright; sale as permanent as flour. Full particulars sent on the receipt of 3 cents. Address J. T. HORNE & CO., Box 4,551, New York. 42 4*

BARREL MACHINERY—CROZIER'S PATENT is unrivalled in point of quality and quantity of work performed, and may be seen in constant operation at the Barrel Manufactory of the undersigned. For rights and machines address WELCH & CROZIER,
43 18* Oswego, N. Y.

TO CAR BUILDERS—For Sale, one new Upright Boring Mill for boring car wheels. Maker's price $600, will be sold for $400 cash. Address GEO. S. LINCOLN & CO., Hartford, Ct. 43tf

GROVER'S PATENT WIRE CUTTERS—A view of which is given in No. 42, this paper, are for sale wholesale and retail by E. D. & G. Draper, Hopedale, Milford, Mass. We are also sole agents for the sale of Dutcher's Patent Temples, Perry's Patent Parallel Shuttle Motion, Hayden & Wyllys' Paten Drawing Regulators or Eveners, Thompson's Patent Oilers, &c. 42 7*

A NEW AND SCIENTIFIC INVENTION—Dr Cheever's Galvano-Electric Regenerator. Patent issued Jan. 15th, 1856. A circular relating to the use of the instrument, embracing a general treatise of atony of the spermatic organs, the result of which tends to softening the medullary substance of which the brain is composed may be had gratis, and will be sent to any address by mail by their indicating a desire to receive it. All letters should be directed to DR. J. CHEEVER, No. 1 Tremont Temple, Boston 42 4*

MECHANIC'S TABLES—A New Book. Containing areas, and circumferences of circles, circumferences of angled hoops, when angled outside or inside, cutting of boiler plates, covering of kerfs, solids, &c., weight of various materials. Miscellaneous notes, &c. By Charles H. Haswell, Civil and Marine Engineer. Author of Haswell's Engineers and Mechanics Pocket Book.—This book will be forwarded by mail free of postage for fifty cents. Apply to CHALES H. HASWELL, No. 6 Bowling Green, New York. 42 3

GREAT WESTERN MACHINERY AND PATENT AGENCY—The undersigned have established a house for the sale of machinery and patent rights at No. 64 Randolph St., Chicago, Ill.
38 10* RICHARDS, ELLSWORTH & CO.

BOILER FLUES—All sizes and any length promptly furnished by JAMES O. MORSE & CO., No. 79 John st., N. Y. 37 3mos

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THE NEW YORK DAILY SUN for $2 a year. The miracle of the present age is accomplished by the Publisher of the New York Sun, in furnishing subscribers in clubs of thirty or more with the daily paper by mail for $2 a year. The Sun commenced in 1833; is the oldest, as well as the cheapest of all the cheap daily newspapers. It contains the latest news to be had by telegraph, mail, or express—is independent on all subjects, and has for its platform "Common Sense." Club rates—payable in advance, 5 copies one year $16·50; 10 copies $30; 15 copies $41·25; 20 copies $50; 25 copies $56·25; 30 copies $60. Single copies $4 a year. Papers to be sent in one wrapper, and only by mail, and to be directed to one person only. The postage on the Daily Sun within the State of New York is only 78 cents per year, and only $1·56 to any other part of the United States. Specimen copies sent gratis on application. Letters (always post paid) to be directed to MOSES S. BEACH, Sun Office, New York City. 37 tf

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
LOGAN & LIDGERWOOD,
13 1y* 9 Gold st., N. Y.

MACHINISTS' TOOLS.—Meriden Machine Co have on hand at their New York Office, 15 Gold street, a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 32 13*

FILMER & CO., Electrotypers, and Manufacturers of Electrotype Materials, 128 Fulton st., N. Y. Molding Presses, Batteries, Cases, Backing Pans, Shaving Machines, Metal Kettles, Planes, Blocks, Building Irons, etc., etc., on hand, or furnished at short notice, and at moderate charges. Adams' Improved batteries and black-lead machines also for sale. 23 tf

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 33 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.
Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York Boston, 27 State street, and Lowell, Mass, 19 6m*

GRAIN MILLS—EDWARD HARRISON, of New Haven, Conn., has on hand for sale, and is constantly manufacturing to order, a great variety of his approved Flour and Grain Mills, including Bolting Machinery, Elevators, complete with Mills ready for use. Orders addressed as above to the patentee, who is the exclusive manufacturer, will be supplied with the latest improvements. Cut sent to applications, and all mills warranted to give satisfaction. 42tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co New Haven, Conn. 19 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 31tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 41 tf

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Science and Art.

The Annual amount of Heat.

It is a remarkable fact, that countries lying within the same degrees of latitude differ greatly in the ranges of their temperature. On the west coast of Europe the winters are comparatively warm and the summers equally cool, while on the eastern coasts of America the reverse of this is true. Thus, in countries lying 16° further north in western Europe than New York, the average temperature in January is 30°, and that of July 60°—a range of only thirty degrees. In New York the range of variation often amounts to nearly 100°.

In January last, the thermometer in New York, stood from 5° to 7° below zero, for some days; while it ranged from 95° to 98° above it, for some days last week. But although the ranges of temperature differ greatly in different countries, the actual amount of heat, annually, is according to the position of countries in relation to the poles and the equator.

In Europe, by long observation, it has been found that the mean temperature of a place remains nearly the same. The winter may be unusually cold, and the summer unusually hot, while the mean temperature has not varied one degree; a very cold winter is generally succeeded by a very warm summer, and *vice versa*. This has also been found to be the case with our own climate—the relative distribution of heat over summer and winter undergoes comparatively small variations. A cold winter is generally succeeded by a warm summer. We have noticed an exception, and only one to this rule; that was the summer of 1836, which was wet and cold, and succeeded a very long and cold winter. This was accounted for by three very large dark spots on the sun's disk, which were seen distinctly with the naked eye for at least an entire week.

For what Purpose were Plants Created.

On page 221 we presented some of the views of Prof. Dana, of Yale College, as given in the *Bibliotheca Sacra*, in answer to Lewis' work on Science and Revelation. With some of the views of Prof. D. regarding the objects for which plants were created Prof. Asa Gray, of Cambridge, Mass., does not agree. He takes the ground that plants were especially created for the sustenance of man and animals, not so much to purify the air for animals by inhaling carbonic acid gas and liberating oxygen, as presented by Prof. D.

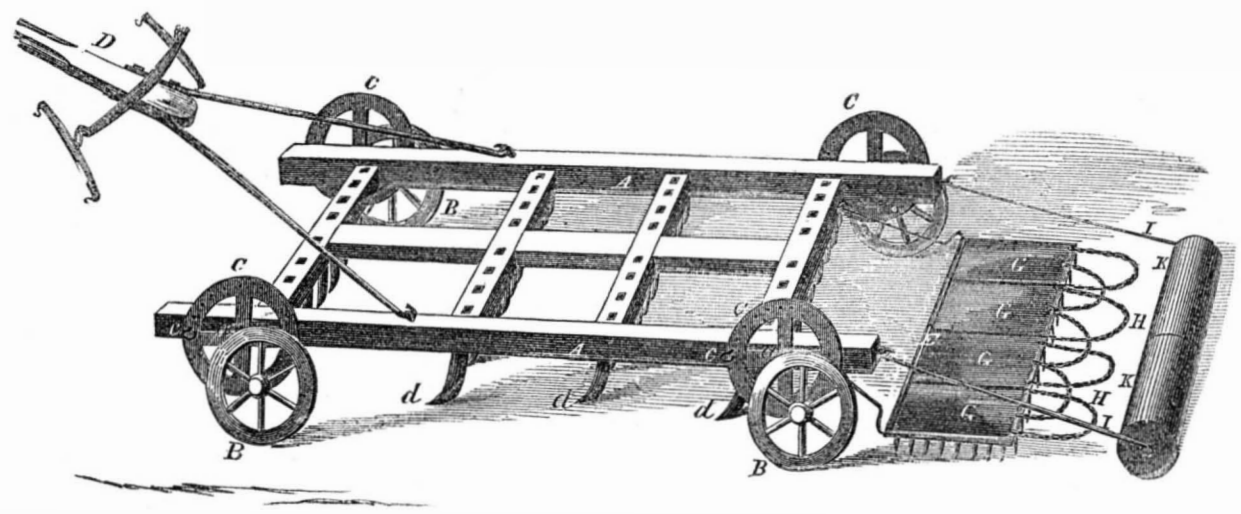
He says :—"Consider the dependence of the animal creation upon the vegetable matter produced, in comparison with the oxygen liberated. Upou the first, as is well known, the dependence of the animal creation is entire and absolute; upon the second only remote and contingent. For vegetable matter so produced, furnishes the whole food and fabric of animals. Without it, animal life could not have existed at all; and were its productions now to be suspended, all the herbivorous and then the carnivorous races would almost all perish at once. On the other hand, the amount of the dependence of animal life upon the disengagement of oxygen gas by plants may be estimated by supposing existing vegetation to cease evolving free oxygen, or (which would come to the same thing) by supposing some new operation in the organic world to absorb the element as fast as it is given to the air by plants. How soon would the diminution of the oxygen of the air be felt even by the higher classes of animals. Making the needful calculations, M. Dumas has answered this question, by assuring us that the unbalanced action of the whole animal kingdom for a century would not consume more than one-eight thousandth part by weight of the oxygen of the atmosphere; "a quantity altogether inappreciable to the most delicate means of investigation we possess at the present day, and which, very certainly, would have no influence on the life of animals," that, as respects the higher races of animals, "it would require no less than 10,000 years before all the men on the globe could produce an effect which should be sensible to Volta's Eudiometer, even supposing vegetable life to be extinct during the whole of this time;"—so vast is the original stock of this important element of the atmosphere.

Surely, then, we ought not to call this remotely needful action upon the air the *essential* office of vegetables in the economy of the world, nor view as a subordinate or concomitant end, that operation of organizing matter which provides the whole animal creation with sustenance, and the failure of which for a single year would depopulate the earth.—Nor should we call that the essential office of vegetation which certainly was not essential (as the other was,) to the existence of an abundant animal life before and during the epoch of the coal formation, and which has not been proved to be *necessary* even to the existence of man."

New Galvanic Battery.

For medicinal uses, M. Breton, of Paris, has contrived the following construction of battery, which maintains the same intensity of action always, on account of its constant humidity and the great number of its elements. One of the poles is made of a mixture of sawdust and copper filings, and the other pole is composed of sawdust mixed with zinc filings. The two poles are placed in one vessel, but are separated by a porous partition. The exciting liquid is a solution of the chloride of calcium —this salt is a great attractor of moisture from the atmosphere.

IMPROVED AGRICULTURAL MACHINE.



New Agricultural Machine.

The invention illustrated by our engraving accomplishes four distinct purposes at one operation, to wit :—It harrows the ground, sows the seed, covers, and then rolls it in. It is a great labor-saver. The common way is to employ three distinct machines for these purposes, and thus to triplicate the time required by the use of the present improvement.

The machine consists of a rectangular frame, A, mounted on wheels, B. The latter are not connected directly to the frame, but have their axes attached to the rims of annular plates, C, which are fastened to the frame by pivots or bolts, *a*. Each plate, C, has a series of holes made through it, through either of which pins, *c*, pass into the side pieces of the frame, A, and allow the plate, C, to be secured at any desired point.

By turning the plates, C, on their pivots, *a*, the frame, A, of course, will be brought nearer to or further from the axis of the wheel, B, and consequently the said frame may be elevated or depressed to the desired hight from the surface of the ground. Into the under surfaces of the frame, A, however, teeth, *d*, are secured, so constructed as to turn a slight furrow at each side of them. The teeth are shaped somewhat like plow coulters. The frame, A, with its teeth, *d*, attached, form a harrow.

To the upper surface of the frame, A, the draft pole, D, is attached. The draft pole, by being thus connected, has a tendency, when the implement is drawn along, to keep the front end of the harrow down, or prevent it from rising from the ground.

At the back end of the machine a shaft, E, is attached parallel with the end of the frame, A. Shaft E has a series of rectangular plates, G, attached to it, the front ends of said plates working loosely on the shaft, E, so that each one may rise and fall independently of the others. When under surfaces of the plates, G, there are oblique or diagonal rows of teeth placed quite close together, similar to those of a hand rake. Two or more rows may be attached to each plate.

Chains, H, are attached behind, G, so as to form loops that will trail or drag over the surface of the ground as the implement is drawn along. K K are rollers attached by rods, I, to the hinder part of the machine.

When the machine is drawn along, the harrow and toothed plates harrow the land the drag chains, H, cover the seed, and the rollers, K K, press the earth down upon the seed. The implement will do its work effectively, and the seed will be worked or harrowed into the soil a uniform distance, the toothed plates preparing the soil for the action of the drag chains. The frame, A, being rendered adjustable, the wheels, B, may be so regulated that the harrow teeth will sink any required distance into the ground; and as the toothed plates rise and fall independently of each other, they will accommodate themselves to the unevenness of the soil.

This appears to be a highly useful and valuable implement. Address the inventor, Mr. James B. Davis, Boston, Mass., for further information. Patent applied for.

Raising a Safe from a Sunken Steamboat.

In 1852 the steamboat *Atlantic* was sunk in Lake Erie, by coming in collision with a propeller, and on board there was a safe belonging to the American Express Company, in which was secured a considerable sum of money. This safe has been raised by a diver clothed in submarine armor, who went down, and was under water for 40 minutes. The Detroit *Advertiser* gives the following account of the affair :—

"The upper deck of the steamer lies one hundred and sixty feet under water, and far below where there is any current or motion. Everything, therefore, is exactly as it first went down. When the diver alighted upon the deck he was surprised to see a beautiful lady whose clothing was well arranged, and her hair elegantly dressed. She was standing erect, with one hand grasping the rigging. Around lay the bodies of several others, as if sleeping. In the cabin the furniture was still untouched by decay, and to all appearance had just been arranged by some careful and tasteful hand.

In the office he found the safe, and was enabled to move it, and took it upon the deck, where the grappling irons were fastened on and the prize brought safely to the light.—There were in the safe $5,000 in gold, $3,500 in bills of the exploded Government Stock Bank, and a large amount of bills on other banks, amounting in all to about $36,000. The papers were uninjured, except that they smelled very strongly of decomposed human bodies. All this money goes to the persons interested in this adventure."

The Detroit *Free Press* says :—"The new bills, we are told, are comparatively uninjured by their long imprisonment and exposure to dampness, but the old ones are quite injured and defaced, whether so much as to prevent their identification and redemption we have not learned."

Atmospheric Impurity and Disease.

Those warm climates in which consumption is really less frequent than in cold, derive the comparative immunity simply from the people being forced by the great heats to live more in an unpolluted atmosphere. It is not sending people to warm climates that always cures consumption, it is sending them to pure air. To confine consumptive persons to close, heated apartments, is but to hasten the ravages of their disease. On the contrary, they should live as much as possible in the open air. It is illusory to think of curing the consumptive by means of food or even medicine, without the amplest access to the free, fresh air. An ounce of oxygen is worth tuns of fish oil or iodine, or any amount of respirators.

The total losses of the American underwriters, from marine disasters, during the six months ending the 30th of June of the present year, is set down at $15,890,000.

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